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5G;
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Universal Subscriber Identity Module (USIM)
application test specification
(3GPP TS 31.121 version 18.3.0 Release 18)**



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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

In the present document, modal verbs have the following meanings:

- shall** indicates a mandatory requirement to do something
- shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

- should** indicates a recommendation to do something
- should not** indicates a recommendation not to do something
- may** indicates permission to do something
- need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

- can** indicates that something is possible
- cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

- will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document
- will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document
- might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

Introduction

The present document defines the application test specification.

The aim of the present document is to ensure interoperability between an UICC and a terminal independently of the respective manufacturer, card issuer or operator. The present document does not define any aspects related to the administrative management phase of the UICC. Any internal technical realisation of either the UICC or the Terminal is only specified where these are reflected over the interface.

Application specific details for applications residing on an UICC are specified in the respective application specific documents. The logical and physical Characteristics of the UICC Terminal interface is specified in document ETSI TS 102 221 [5]. The Universal Subscriber Identity Module (USIM)-application for 3G telecommunication networks is specified in document TS 31.102 [4].

1 Scope

The present document provides the UICC–Terminal Interface Conformance Test Specification between a terminal and the USIM (Universal Subscriber Identity Module) as an application on the UICC and the Terminal for a 3GPP network operation:

- the default setting of the USIM;
- the applicability of each test case;
- the test configurations;
- the conformance requirement and reference to the core specifications;
- the test purposes; and
- a brief description of the test procedure and the specific acceptance criteria.

For the avoidance of doubt, references to clauses of ETSI TS 102 221 [5] include all the clauses of that clause, unless specifically mentioned.

ETSI TS 102 221 [5] contains material that is outside of the scope of 3GPP requirements. A 3GPP ME may support functionality that is not required by 3GPP, but the requirements to do so are outside of the scope of 3GPP. Thus the present document does not contain tests for features defined in ETSI TS 102 221 [5] which are out of scope of 3GPP.

In the present document, unless explicitly stated otherwise, for Rel-13 onwards the term E-UTRAN implicitly refers to E-UTRAN in WB-S1 mode. E-UTRAN in NB-S1 mode is always explicitly referred to as NB-IoT.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version in same release as the implementation release of the terminal under test applies.

[1] Void

[2] Void

[3] 3GPP TS 23.038: "Alphabets and language-specific information".

[4] 3GPP TS 31.102: "Characteristics of the USIM application".

[5] If the device under test is a

- R99 ME: ETSI TS 102 221 v3.18.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-4 ME:ETSI TS 102 221 v4.16.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-5 ME:ETSI TS 102 221 v5.10.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-6 ME:ETSI TS 102 221 v6.15.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-7 ME:ETSI TS 102 221 v7.17.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-8 ME:ETSI TS 102 221 v8.5.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-9 ME:ETSI TS 102 221 v9.2.0: "UICC-Terminal interface; Physical and logical characteristics",

- Rel-10 ME: ETSI TS 102 221 v10.0.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-11 ME: ETSI TS 102 221 v11.1.0: "UICC-Terminal interface; Physical and logical characteristics",
- Rel-12 ME: ETSI TS 102 221 v12.1.0: "UICC-Terminal interface; Physical and logical characteristics".
- Rel-13 ME: ETSI TS 102 221 v13.2.0: "UICC-Terminal interface; Physical and logical characteristics".
- Rel-14 ME: ETSI TS 102 221 v14.1.0: "UICC-Terminal interface; Physical and logical characteristics".
- Rel-15 ME: ETSI TS 102 221 v15.0.0: "UICC-Terminal interface; Physical and logical characteristics".
- Rel-16 ME: ETSI TS 102 221 v15.2.0: "UICC-Terminal interface; Physical and logical characteristics".
- Rel-17 ME: ETSI TS 102 221 v17.4.0: "UICC-Terminal interface; Physical and logical characteristics".

- [6] 3GPP TS 22.011: "Service accessibility".
- [7] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [8] 3GPP TS 22.024: "Description of Charge Advice Information (CAI)".
- [9] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Service – Stage 2".
- [10] 3GPP TS 24.086: "Advice of Charge (AoC) Supplementary Service – Stage 3".
- [11] 3GPP TS 22.101: "Service aspects; Service principles".
- [12] 3GPP TS 22.030: "Man-Machine Interface (MMI) of the User Equipment (UE)".
- [13] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".
- [14] 3GPP TS 23.003: "Numbering, Addressing and Identification".
- [15] 3GPP TS 44.018: "Mobile radio interface layer 3 specification; Radio Resource Control Protocol".
- [16] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core Network protocols; Stage 3".
- [17] 3GPP TS 24.080: "Mobile radio Layer 3 supplementary service specification; Formats and coding".
- [18] 3GPP TS 22.086: "Advice of Charge (AoC) supplementary services; Stage 1".
- [19] 3GPP TS 21.111: "USIM and IC card requirements".
- [20] 3GPP TS 25.331 "Radio Resource Control (RRC); Protocol Specification".
- [21] 3GPP TS 34.108 "Common test environments for User Equipment (UE) conformance testing".
- [22] 3GPP TS 51.010-1 "Mobile Station (MS) conformance specification; Part1: Conformance specification".
- [23] 3GPP TS 23.140 Release 6 "Multimedia Messaging Service (MMS); Functional description; Stage 2".
- [24] 3GPP TS 24.002 "GSM – UMTS Public Land Mobile Network (PLMN) Access Reference Configuration".
- [25] 3GPP TS 23.060 "General Packet Radio Service (GPRS); Service description; Stage 2".
- [26] 3GPP TS 24.301: "Technical Specification Group Core Network and Terminals; Non-Access-Stratum (NAS) protocol for Evolved Packet Systems (EPS); Stage 3".
- [27] 3GPP TS 33.401: "3GPP System Architecture Evolution (SAE); Security architecture".

- [28] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RRC); Protocol specification".
- [29] 3GPP TS 36.508: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing"
- [30] 3GPP TS 36.523-2 "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); User Equipment (UE) conformance specification Part 2: Implementation Conformance Statement (ICS) proforma specification"
- [31] 3GPP TS 23.122: "Non-Access-Stratum functions related to Mobile Station (MS) in idle mode".
- [32] 3GPP TS 31.103: "Characteristics of the IP Multimedia Services Identity Module (ISIM) application".
- [33] 3GPP TS 34.229-1: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".
- [34] 3GPP TS 22.220: "Universal Mobile Telecommunications System (UMTS); Service requirements for Home Node B (HNB) and Home eNode B (HeNB)".
- [35] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE); Procedures in idle mode".
- [36] 3GPP TS 24.368: "Non-Access Stratum (NAS) configuration Management Object (MO)"
- [37] 3GPP TS 23.401: "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access".
- [38] 3GPP 34.123-1: "User Equipment (UE) conformance specification; Part 1: Protocol conformance specification".
- [39] 3GPP TS 31.101: " UICC-terminal interface; Physical and logical characteristics".
- [40] 3GPP TS 38.508-1: "5GS; User Equipment (UE) conformance specification; Part 1: Common test environment".
- [41] 3GPP TS 33.501: "Security architecture and procedures for 5G System".
- [42] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".
- [43] 3GPP TS 22.261: "Service requirements for the 5G system".
- [44] 3GPP TS 38.331: "NR Radio Resource Control (RRC) protocol specification".
- [45] 3GPP TS 33.102: "3G security; Security architecture".
- [46] RFC 5480; "Elliptic Curve Cryptography Subject Public Key Information".
- [47] RFC 4187; "Extensible Authentication Protocol Method for 3rd Generation Authentication and Key Agreement (EAP-AKA)".
- [48] Void
- [49] 3GPP TS 23.501: "System architecture for the 5G System (5GS)".
- [50] 3GPP TS 24.526: "User Equipment (UE) policies for 5G System (5GS)".
- [51] 3GPP TS 23.501: "System architecture for the 5G System (5GS)".
- [52] 3GPP TS 23.503: "Policy and charging control framework for the 5G System (5GS)".
- [53] ISO/IEC 9646-7: "Information technology -- Open Systems Interconnection -- Conformance testing methodology and framework -- Part 7: Implementation Conformance Statements".3 Definitions, symbols, abbreviations and coding.

- [54] ETSI TS 101 220: "Smart cards; ETSI numbering system for telecommunication application providers".
- [55] 3GPP TS 23.316: "Wireless and wireline convergence access support for the 5G System (5GS) "
- [56] 3GPP TS 33.203: "Technical Specification Group Services and System Aspects; 3G security; Access security for IP-based services".
- [57] 3GPP TS 34.229-5: "Internet Protocol (IP) multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Part 5: Protocol conformance specification using 5G System (5GS) ".
- [58] 3GPP TS 23.502: "Technical Specification Group Services and System Aspects; Procedures for the 5G System (5GS); Stage 2".
- [59] 3GPP TS 31.105: "Characteristics of the Slice Subscriber Identity Module application".
- [60] 3GPP TS 27.007: "AT command set for User Equipment (UE)".
- [61] 3GPP TS 36.102: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception for satellite access".
- [62] IEEE Std 802.11-2016 (Revision of IEEE Std 802.11-2012) - IEEE Standard for Information technology—Telecommunications and information exchange between systems Local and metropolitan area networks—Specific requirements - Part 11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

Application DF (ADF): entry point to an application

access conditions: set of security attributes associated with a file

access technology: Radio Access Technology of the Terminal (e.g. NG-RAN, E-UTRAN, UTRAN or GSM)

application: consists of a set of security mechanisms, files, data and protocols (excluding transmission protocols)

application protocol: set of procedures required by the application

card session: link between the card and the external world starting with the ATR and ending with a subsequent reset or a deactivation of the card

current directory: latest MF or DF or ADF selected

current EF: latest EF selected

data object: information coded as TLV objects, i.e. consisting of a Tag, a Length and a Value part

Dedicated File (DF): file containing access conditions and, optionally, Elementary Files (Efs) or other Dedicated Files (DFs)

directory: general term for MF, DF and ADF

Elementary File (EF): file containing access conditions and data and no other files

file: directory or an organised set of bytes or records in the UICC

file identifier: 2 bytes which address a file in the UICC

function: function contains a command and a response pair

GSM session: that part of the card session dedicated to the GSM operation

Master File (MF): unique mandatory file containing access conditions and optionally DFs and/or Efs

MMS Relay/Server: MMS-specific network entity/application that is under the control of the MMS service provider

NOTE: An MMS Relay/Server transfers messages, provides operations of the MMS that are specific or required by the mobile environment and provides (temporary and/or persistent) storage services to the MMS

MMS User Agent: application residing on a UE or an external device that performs MMS-specific operations on a user's behalf

normal USIM operation: relating to general, PIN related, 3GPP network security and subscription related procedures

record: string of bytes within an EF handled as a single entity

record number: number, which identifies a record within an EF

record pointer: pointer, which addresses one record in an EF

SIB1: *SystemInformationBlockType1* contains information relevant when evaluating if a UE is allowed to access a cell and defines the scheduling of other system information blocks

terminal: device into which a UICC can be inserted and which is capable of providing access to 3GPP system services to users, either alone or in conjunction with a UICC

User Equipment (UE): terminal with a UICC inserted with one or several Universal Subscriber Identity Module(s) (USIM) available for access either NG-RAN or E-UTRAN or UTRAN or GERAN or any combination.

USIM session: USIM session is a selectable application session for a USIM application.

WLAN AN: WLAN Access Network.

WLAN AP Cell A_w: Wireless access point hosting WLAN Cell A.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

bx	Bit x of byte (leftmost bit is MSB)
Bn	Byte No. n

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

2G	2 nd Generation
3G	3 rd Generation
3GPP	3 rd Generation Partnership Project
5G	5 th Generation
5G-CRG	5G Cable Residential Gateway
AAA	Authentication Authorization and Accounting
AAA-S	AAA Server
ACC	Access Class
ACL	APN Control List
ACM	Accumulated Call Meter
ACMmax	ACM maximal value
ACT	Access Technology
ADF	Application Dedicated File
AoC	Advice of Charge
AoCC	Advice of Charge Charging
APN	Access Point Name
ASME	Access Security Management Entity

ATR	Answer To Reset
BCCH	Broadcast Control Channel
BCD	Binary Coded Decimal
BDN	Barred Dialling Number
CAG	Closed Access Group
CCI	Capability / Configuration1 Identifier
CCI2	Capability / Configuration 2 Identifier
CCM	Current Call Meter
CK	Cipher key
CN	Core Network
CS	Circuit switched
CSG	Closed Subscriber Group
DF	Dedicated File
EAP	Extensible Authentication Protocol
eMBB	Enhanced MBB
eMTC	Enhanced Machine Type Communication
EPC	Evolved Packet Core
E-USS	Evolved Universal System Simulator
E-UTRA	Evolved UTRA
EF	Elementary File
eFDD	evolved Frequency Division Duplex
EMM	EPS Mobility Management
EMMI	Electrical Man Machine Interface
EPS	Evolved Packet System
eTDD	evolved Time Division Duplex
Ext n	Extension n
FDD	Frequency Division Duplex
FDN	Fixed Dialling Number
FN-BRG	Fixed Network Broadband Residential Gateway
FN-CRG	Fixed Network Cable Residential Gateway
FPLMN	Forbidden PLMN
GCI	Global Cable Identifier
GLI	Global Line Identifier
GSM	Global System for Mobile communications
HNB	Home NodeB
HeNB	Home eNodeB
HPLMN	Home PLMN
ICC	Integrated Circuit Card
ID	Identifier
IEC	International Electrotechnical Commission
IK	Integrity key
IMSI	International Mobile Subscriber Identity
ISO	International Organization for Standardization
KSI	Key Set Identifier
LAC	Location Area Code
LAI	Location Area Information
LSB	Least Significant Bit
MBB	Mobile Broadband
MCC	Mobile Country Code
MCS	Mission Critical Services
MF	Master File
MM	Multimedia Message
MMI	Man Machine Interface
MMS	Multimedia Messaging Service
MNC	Mobile Network Code
MPS	Multimedia Priority Service
MS	Mobile Station
MSB	Most Significant Bit
N3IWF	Non-3GPP Inter-Working Function
NAI	Network Access Identifier
NAS	Non Access Stratum
NB-IoT	Narrow Band Internet of Things

NB-SS	Narrow Band System Simulator
NG-RAN	Next Generation Radio Access Network
NG-SS	Next Generation System Simulator
NPI	Numbering Plan Identifier
NSSAA	Network Slice-Specific Authentication and Authorization
NSI	Network Specific Identifier
NSWO	Non-Seamless WLAN Offload
NTN	Non-Terrestrial Networks
OCST	Operator Controlled Signal Threshold per Access Technology
OSI	Open System Interconnection
P1	Parameter 1
P2	Parameter 2
P3	Parameter 3
PIN	Personal Identification Number
PLMN	Public Land Mobile Network
PS	Packet switched
RACH	Random Access Channel
RFU	Reserved for Future Use
RRC	Radio Resource Control
SAT-E-USS	Satellite Evolved Universal System Simulator
SAT-NG-SS	Satellite Next Generation System Simulator
SAT-NB-SS	Satellite Narrow Band System Simulator
SD	Slice Differentiator
SENSE	Signal level Enhanced Network SElection
SFI	Short File Identifier
SIB	System Information Block
SM	Short Message
SMS	Short Message Service
S-NSSAI	Single Network Slice Selection Assistance Information
SOR	Steering of Roaming
SOR-CMCI	Steering of roaming connected mode control information
SS	System Simulator (GSM)
SSIM	Slice Subscriber Identity Module
SST	Slice/Service type
SUCI	Subscription Concealed Identifier
SUPI	Subscription Permanent Identifier
TAI	Tracking Area Identity
TDD	Time Division Duplex
TE	Terminal Equipment
TLV	Tag Length Value
TMSI	Temporary Mobile Subscriber Identity
TON	Type Of Number
UAC	Unified Access Control
UE	User Equipment
URSP	UE Route Selection Policy
USIM	Universal Subscriber Identity Module
USS	UMTS System Simulator
UTRA	Universal Terrestrial Radio Access
UTRAN	UMTS Terrestrial Radio Access Network
VPLMN	Visitor PLMN

3.4 Coding Conventions

For the purposes of the present document, the following coding conventions apply:

All lengths are presented in bytes, unless otherwise stated. Each byte B is represented by eight bits b8 to b1, where b8 is the most significant bit (MSB) and b1 is the least significant bit (LSB). In each representation, the leftmost bit is the MSB.

In the UICC, all bytes specified as RFU shall be set to '0' and all bits specified as RFU shall be set to '0'. If the GSM and/or USIM application exists on a UICC or is built on a generic telecommunications card, then other values may

apply for the non- GSM or non-USIM applications. The values will be defined in the appropriate specifications for such cards and applications. These bytes and bits shall not be interpreted by a Terminal in a GSM or 3G session.

The coding of all data objects in the present document is according to ETSI TS 102 221 [5]. All data objects are BER-TLV except if otherwise defined.

3.5 Generic procedures for E-UTRAN/UTRAN/GERAN/IMS/NB-IoT/5G-NR

If a test case contains the statement "This test applies to Terminals accessing E-UTRAN", the procedures defined in TS 36.508 [29] shall be the basis for all performed procedures during the test. The procedures in clause 4.5 describe the default behaviour of a conformant UE regarding the specified protocols to be used for E-UTRAN and the required procedures from the NAS.

If a test case contains the statement "This test applies to Terminals accessing UTRAN", the procedures defined in TS 34.108 [21], clause 7.2 shall be the basis for all performed procedures during the test. The procedures in clause 7 describe the default behaviour of a conformant UE regarding the specified protocols to be used for UTRAN and the required procedures from the NAS.

If a test case contains the statement "This test applies to Terminals accessing GERAN", the procedures defined in TS 51.010-1 [22], clause 10 shall be the basis for all performed procedures during the test. The procedures in clause 10 describe the default behaviour of a conformant UE regarding the specified protocols to be used for GERAN and the required procedures from the NAS.

3GPP TS 34.229-1[33], Annex C describes the generic test procedures for IMS.

If a test case contains the statement "This test applies to Terminals accessing NB", the procedures defined in TS 36.508 [29] shall be the basis for all performed procedures during the test. The procedures in TS 36.508 [29] clause 8.1.5 describe the default behaviour of a conformant UE regarding the specified protocols to be used for NB-IoT and the required procedures from the NAS.

If a test case contains the statement "This test applies to Terminals accessing 5G-NR", the procedures defined in TS 38.508-1 [40] shall be the basis for all performed procedures during the test. The procedures in clause 4.5 describe the default behaviour of a conformant UE regarding the specified protocols to be used for 5G-NR, and satellite NG-RAN, and the required procedures from the NAS. Depending on the Usage Setting of the Terminal NG-SS and UE shall use the default configuration as defined in clause 4A. If the usage setting of the terminal is voice centric `pc_ue_usage_voice_centric` shall be set to TRUE.

5G-NR generic procedure for 5G Registration on 3GPP access with IMS service is defined in Annex Z.1.

3.6 Applicability

3.6.1 Applicability of the present document

The present document applies to a terminal equipment supporting the USIM.

3.6.2 Applicability to terminal equipment

The applicability to terminal equipment supporting the USIM is specified in table B.1, unless otherwise specified in the specific clause.

NOTE: For RedCap UEs, test cases applicable to 5G NR UEs and RedCap specific test cases (if any) are applicable.

3.6.3 Applicability of the individual tests

Table B.1 lists the optional, conditional or mandatory features for which the supplier of the implementation states the support. As pre-condition the supplier of the implementation shall state the support of possible options in table A.1.

The "Release XY ME" columns shows the status of the entries as follows:

The following notations, defined in ISO/IEC 9646-7 [53], are used for the status column:

M	mandatory – the capability is required to be supported.
O	optional – the capability may be supported or not.
N/A	not applicable – in the given context, it is impossible to use the capability.
X	prohibited (excluded) – there is a requirement not to use this capability in the given context.
O.i	qualified optional – for mutually exclusive or selectable options from a set. "i" is an integer which identifies an unique group of related optional items and the logic of their selection which is defined immediately following the table.
Ci	conditional – the requirement on the capability ("M", "O", "X" or "N/A") depends on the support of other optional or conditional items. "i" is an integer identifying an unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." shall be used to avoid ambiguities.

The "Additional test case execution recommendation" column shows the status of the entries as follows:

A	applicable - the test is applicable according to the corresponding entry in the "Rxx ME" column
R	redundant – the test has to be considered as redundant when the corresponding E-UTRAN/EPC related test of the present document has been validated and successfully executed. In that case the requirement may be verified by means of the E-UTRAN/EPC functionality only.
AERi	Additional test case Execution Recommendation – with respect to the above listed definitions of ("A") and ("R") the test is applicable ("A") or redundant ("R") depending on the support of other optional or conditional items. "i" is an integer identifying a unique conditional status expression which is defined immediately following the table. For nested conditional expressions, the syntax "IF ... THEN (IF ... THEN ... ELSE...) ELSE ..." shall be used to avoid ambiguities.

References to items

For each possible item answer (answer in the support column) there exists a unique reference, used, for example, in the conditional expressions. It is defined as the table identifier, followed by a solidus character "/", followed by the item

number in the table. If there is more than one support column in a table, the columns shall be discriminated by letters (a, b, etc.), respectively.

EXAMPLE: A.1/4 is the reference to the answer of item 4 in table A.1.

3.7 Table of optional features

Support of several features is optional or release dependent for the terminal equipment. However, if an ME states conformance with a specific 3GPP release, it is mandatory for the ME to support all mandatory functions of that release, as stated in table A.1 with the exception of the functions:

- "Support of ACL"; and
- "Support of local phonebook";

The supplier of the implementation shall state the support of possible options in table A.1.

Table A.1: Options

Item	Option	Status	Support	Mnemonic
1	Support of CS	O		O_CS
2	Support of a feature requiring PIN2 entry (such as e.g. AoC or FDN)	O		O_PIN2_ENTRY_FEAT
3	Support of UTRAN access	C001		O_UTRAN
4	Support of GERAN access	C002		O_GERAN
5	Support of Fixed Dialling Numbers	O		O_FDN
6	Support of Advice of Charge Charging	O		O_AoCC
7	Support of Higher priority PLMN selector with Access Technology service (Implementation is optional in Rel-6 and onwards)	C003		O_HPLMNwACT
8	Support of local phonebook	O note 1		O_Local_PB
9	Support of global phonebook	C004		O_Global_PB
10	Support of storing received Class 2 Short Messages in the USIM	O		O_Store_Received_SMS
11	Support of MMS	O		O_MMS
12	Support of usage of MMS related data stored on the USIM	C005		O_MMS_USIM_DATA
13	Supported of unselected user MMS connectivity parameters	O		O_NO_USER_MMS_CONF_SELEC
14	Support of MMS notification storage on the USIM	O		O_MMS_NOTIF_STORAGE
15	Support of ACL	O note 2		O_ACL
16	Support of SDN	O		O_SDN
17	Support of numerical entry of PLMN codes in EF PLMNwACT	O		O_EFPLMNwACT_numerical entry
18	Terminal does support speech call	O		O_Speech_Calls
19	Terminal support PIN MMI strings	O		O_PIN_MMI_Strings
20	Terminal does support eFDD	O		pc_eFDD
21	Terminal does support eTDD	O		pc_eTDD
22	Terminal does support CSG list handling (for E-UTRA)	O		pc_Allowed_CSG_list
23	Terminal supports SM-over-IP-receiver	O		pc_SM-over-IP receiver
24	Terminal supports reading SMS' stored in EF SMS on the USIM if USIM and ISIM are present	O		pc_USIM_EF_SMS_reading_support_if_USI M_ISIM both present
25	Terminal supports reading SMS' stored in EF SMS on the ISIM if USIM and ISIM are present	O		pc_ISIM_EF_SMS_reading_support_if_USIM _ISIM both present

26	Terminal can store more than 1000 text messages	O		O_LARGE_SMS_STORAGE
27	Support for multiple PDN connections	O		pc_Multiple_PDN
28	Terminal does support CSG (for UTRA)	O		pc_CSG
29	Support of manual CSG selection	O		pc_manual_CSG_selection
30	Support of PS	O		O_PS
31	Terminal does support display	O		O_Display
32	Terminal does support keypad	O		O_Keypad
33	Terminal supports E-UTRA Disabling Allowed for EMM cause #15	O		O_EUTRA_Disabling_EMM_cause#15
34	Terminal supports Override NAS signalling low priority	O		O_Override_NAS_signalling_low_priority
35	Terminal supports T3245 timer	O		O_T3245
36	Terminal supports Override Extended access barring	O		O_Override_EAB
37	Terminal does support NB-IoT	O		pc_NB
38	MS maintains a list of PLMN-specific attempt counters	O		O_PLMN_specific_attempt_counters
39	Terminal does support deactivation of the UICC in PSM.	O		O_PSM_DEAC_UICC
40	Terminal does support deactivation of the UICC during extended DRX	O		O_eDRX_DEAC_UICC
41	Terminal does support the UICC suspension mechanism in PSM.	O		O_PSM_SUSPEND_UICC
42	Terminal does support the UICC suspension mechanism during extended DRX	O		O_eDRX_SUSPEND_UICC
43	UE supports 5G Core Network	O		pc_5GC
44	Support of NR access	O		pc_NR
45	Support of URSP by USIM	O		O_URSP_by_USIM
46	Terminal supports SUPI as Network Access Identifier (NSI, GLI or GCI)	O		O_SUPI_NAI
47	Supports RRC_INACTIVE	O		pc_inactiveState
48	Support of multiple registrations by USIM	O		O_multregs_by_USIM
49	Terminal supports CAG	O		pc_CAG
50	Support of NR NTN access	O		pc_nonTerrestrialNetwork_r17
51	Support of UE usage voice centric	O		pc_ue_usage_voice_centric
52	Support of NAS signalling over N3IWF	O		O_NAS_Sig_over_N3IWF
53	Support of No E-UTRA Disabling In 5GS	O		O_No E-UTRA_Disabling_In_5GS
54	Support of SSIM during NSSAA procedure	O		O_SSIM
55	Support of steering of roaming connected mode control information	O		pc_SORCMCI
56	Support of SENSE	O		O_SENSE
57	MS supports T _{SENSE} counter to be modified for test	O		O_T _{SENSE} counter modifiable for test
58	Support of E-UTRAN Cat M2	O		pc_Category_M2_EUTRAN
59	Support of NTN access in NB-IoT	O		pc_NB_ntn_Connectivity_EPC
60	Support of NTN access in CE Mode A	O		pc_ntn_Connectivity_EPC_CE_ModeA
61	Support of Non-seamless WLAN Offload	O		pc_5GNSWO

C001	If terminal is 3G terminal then M else N/A
C002	If terminal is 2G terminal then M else O
C003	If Higher priority PLMN selector with Access Technology service is implemented according to Rel-6 or later then O else M
C004	If (A.1/18 is supported) AND (A.1/31 is supported) AND (A.1/32 is supported) AND (terminal is implemented according to Rel-6 or later) then M, else O
C005	If ((A.1/11 is NOT supported) OR (terminal is implemented according to R99)) then N/A else if terminal is implemented according to Rel-4 then O else M
C006	void

NOTE 1: The support of this feature was made optional by CR#0214. See conditions in TS 31.102 [4]

NOTE 2: The support of this feature was made optional by CR#0200.

3.8 Applicability table

Table B.1: Applicability of tests

Test#	Title	from Rel	up to Rel (see note)	Applicability	Network Dependency	Add. Recommend	Support
5	Subscription related tests						
5.1	IMSI / TMSI handling						
5.1.1	UE identification by short IMSI	R99	Rel-7	M	USS OR SS	AER005	
		Rel-8		C049			
5.1.2	UE identification by short IMSI using 2-digit MNC	R99	Rel-7	M	USS OR SS	AER005	
		Rel-8		C049			
5.1.3	UE identification by "short" TMSI	R99		C004	USS OR SS	AER005	
5.1.4	UE identification by "long" TMSI	R99		C004	USS OR SS	AER005	
5.1.5	UE identification by long IMSI, TMSI updating after key set identifier assignment	R99		C004	USS OR SS	AER005	
5.1.6	UE identification by short IMSI when accessing E-UTRAN/EPC	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
5.1.7	UE identification by short IMSI using 2-digit MNC when accessing E-UTRAN/EPC	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
5.1.8	UE identification after changed IMSI with service "EMM Information" not available	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
5.1.9	UE identification by GUTI when using USIM with service "EMM Information" not available	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
5.1.10	UE identification by GUTI when using USIM with service "EMM Information" available	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
5.2	Access Control handling						
5.2.1	Access Control information handling	R99		C024	USS OR SS		
5.2.2	Access Control information handling for E-UTRAN/EPC	Rel-8		C036	E-USS		
5.2.3	Access Control information handling for NB-IoT	Rel-13		C046	NB-SS		
5.3	Handling subscription identifier privacy for 5G						
5.3.1	SUCI calculation by ME using null scheme	Rel-15		C056	NG-SS		
5.3.2	SUCI calculation by ME using Profile B	Rel-15		C056	NG-SS		
5.3.3	UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B	Rel-15		C056	NG-SS		
5.3.4	UE identification by SUCI in response to IDENTITY REQUEST message	Rel-15		C056	NG-SS		
5.3.5	UE identification by SUCI in response to IDENTITY REQUEST message with T3519 timer expiry	Rel-15		C056	NG-SS		
5.3.6	UE identification by SUCI in response to IDENTITY REQUEST message and AUTHENTICATION REJECT	Rel-15		C056	NG-SS		
5.3.7	SUCI calculation by the ME using null scheme – missing parameters for subscription identifier privacy support by the USIM	Rel-15		C056	NG-SS		
5.3.8	UE identification by 5G-GUTI – Last Registered TAI stored on USIM	Rel-15		C056	NG-SS		

5.3.9	UE identification by 5G-GUTI – Last Registered TAI stored by ME	Rel-15		C056	NG-SS		
5.3.10	UE identification after SUPI is changed	Rel-15		C056	NG-SS		
5.3.11	SUCI calculation by ME using Profile A	Rel-15		C056	NG-SS		
5.3.12	UE identification by SUCI during initial registration – SUCI calculation by USIM using profile A	Rel-15		C056	NG-SS		
5.3.13	SUCI calculation by ME using null scheme – no Protection Scheme Identifier provisioned in the USIM	Rel-15		C056	NG-SS		
5.3.14	SUCI calculation by ME using null scheme – no Home Network Public Key for supported protection scheme provisioned in the USIM	Rel-15		C056	NG-SS		
5.3.15	SUCI calculation by ME using null scheme with the E-UTRAN/EPC UICC	Rel-15		C056	NG-SS		
5.3.16	SUCI calculation by ME using the lower priority protection scheme when the higher priority protection scheme is not supported by the ME	Rel-15		C056	NG-SS		
5.3.17	SUCI calculation by ME using Profile B with compressed Home Network Public Key	Rel-15		C056	NG-SS		
5.4	Unified Access Control information handling for 5G-NR						
5.4.1	Unified Access Control – Access identity 0, no access identities indicated by USIM	Rel-15		C056	NG-SS		
5.4.1A	Unified Access Control – Access identity 0, no access identities indicated by USIM, Access Category 8	Rel-15		C060	NG-SS		
5.4.2	Unified Access Control – Access Identity 1 – MPS indicated by USIM	Rel-15		C056	NG-SS		
5.4.2A	Unified Access Control – Access Identity 1 – MPS indicated by USIM, Access Category 8	Rel-15		C060	NG-SS		
5.4.3	Unified Access Control Access Identity 1 – no MPS indication by USIM and SUPI not changed	Rel-15		C056	NG-SS		
5.4.4	Unified Access Control Access Identity 1 – no MPS indication by USIM and SUPI is changed	Rel-15		C056	NG-SS		
5.4.5	Unified Access Control – Access Identity 2 – MCS indicated by USIM	Rel-15		C056	NG-SS		
5.4.5A	Unified Access Control – Access Identity 2 – MCS indicated by USIM	Rel-15		C060	NG-SS		
5.4.6	Unified Access Control – Access Identity 2 – no MCS indication by USIM and SUPI is not changed	Rel-15		C056	NG-SS		
5.4.7	Unified Access Control – Access Identity 2 – no MCS indication by USIM and SUPI is changed	Rel-15		C056	NG-SS		
5.4.8	Unified Access Control – Access Identities 11 and 15 indicated by USIM	Rel-15		C056	NG-SS		
5.4.8A	Unified Access Control – Access Identities 11 and 15 indicated by USIM, Access Category 8	Rel-15		C060	NG-SS		
5.4.9	Unified Access Control – Access Identities 12, 13 and 14 indicated by USIM	Rel-15		C056	NG-SS		

5.4.9A	Unified Access Control – Access Identities 12, 13 and 14 indicated by USIM, Access Category 8	Rel-15		C060	NG-SS		
5.4.10	Unified Access Control – Operator-Defined Access Category	Rel-15		C056	NG-SS		
5.4.11	Unified Access Control – Operator-Defined Access Categories, no change in SUPI	Rel-15		C056	NG-SS		
5.4.12	Unified Access Control – Operator-Defined Access Categories, SUPI change	Rel-15		C056	NG-SS		
5.5	Handling of operator controlled features						
5.5.1	Display of registered 5G PLMN name from USIM	Rel-15		C057	NG-SS		
5.5.2	Display of registered 5G PLMN name from ME	Rel-15		C057	NG-SS		
5.6	Handling subscription identifier privacy for 5G - SUPI type in NAI format						
5.6.1	SUCI calculation by ME using null scheme	Rel-16		C059	NG-SS		
5.6.2	UE identification by SUCI during initial registration – SUCI calculation by USIM using profile A	Rel-16		C059	NG-SS		
5.6.3	UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B	Rel-16		C059	NG-SS		
5.6.4	UE identification after SUPI is changed	Rel-16		C059	NG-SS		
5.6.5	UE identification by SUCI during initial registration – SUCI calculation by ME using profile A	Rel-16		C059	NG-SS		
5.6.6	UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B	Rel-16		C059	NG-SS		
5.7	Handling subscription identifier privacy for 5G NSWO						
5.7.1	UE identification by SUCI during initial registration – SUCI 5G NSWO calculation by USIM using profile A	Rel-17		C072	NG-SS		
5.7.2	UE identification by SUCI during initial registration – SUCI 5G NSWO calculation by USIM using profile B	Rel-17		C072	NG-SS		
6	Security related Tests						
6.1	PIN handling						
6.1.1	Entry of PIN	R99		M			
6.1.2	Change of PIN	R99		M			
6.1.3	Unblock PIN	R99		C025			
6.1.4	Entry of PIN2	R99		C005			
6.1.5	Change of PIN2	R99		C005			
6.1.6	Unblock PIN2	R99		C026			
6.1.7	Replacement of PIN	R99		M			
6.1.8	Change of Universal PIN	R99		M			
6.1.9	Unblock Universal PIN	R99		M			
6.1.10	Entry of PIN on multi-verification capable UICCs	Rel-4		M			
6.1.11	Change of PIN on multi-verification capable UICCs	Rel-4		M			
6.1.12	Unblock PIN on multi-verification capable UICCs	Rel-4		C025			
6.1.13	Entry of PIN2 on multi-verification capable UICCs	Rel-4		C005			
6.1.14	Change of PIN2 on multi-verification capable UICCs	Rel-4		C005			
6.1.15	Unblock PIN2 on multi-verification capable UICCs	Rel-4		C026			

6.1.16	Replacement of PIN with key reference "07"	Rel-4		M			
6.2	Fixed Dialling Numbers (FDN) handling						
6.2.1	Terminal and USIM with FDN enabled, EFADN readable and updateable	R99	Rel-4	C006	USS OR SS		
6.2.2	Terminal and USIM with FDN disabled	R99		C006	USS OR SS		
6.2.3	Enabling, disabling and updating of FDN	R99		C006	USS OR SS		
6.2.4	Terminal and USIM with FDN enabled, EFADN readable and updateable (Rel-4 and onwards)	Rel-4		C006	USS OR SS		
6.4	Advice of charge (AoC) handling						
6.4.1	AoC not supported by USIM	R99		C007	USS OR SS		
6.4.2	Maximum frequency of ACM updating	R99		C008	USS OR SS		
6.4.3	Call terminated when ACM greater than ACMmax	R99		C008	USS OR SS		
6.4.4	Response codes of increase command of ACM	R99		C008	USS OR SS		
7	PLMN related tests						
7.1	FPLMN handling						
7.1.1	Adding FPLMN to the Forbidden PLMN list	R99		C047	USS OR SS	AER005	
7.1.2	UE updating forbidden PLMNs	R99		C047	USS OR SS	AER005	
7.1.3	UE deleting forbidden PLMNs	R99	Rel-7	M	USS OR SS	AER005	
		Rel-8		C049			
7.1.4	Adding FPLMN to the forbidden PLMN list when accessing E-UTRAN	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
7.1.5	UE updating forbidden PLMNs when accessing E-UTRAN	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
7.1.6	UE deleting forbidden PLMNs when accessing E-UTRAN	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
7.1.7	Updating the Forbidden PLMN list after receiving non-integrity protected reject message – UTRAN	Rel-13		C048	USS	AER006	
7.1.8	Updating the Forbidden PLMN list after receiving non-integrity protected reject message – E-UTRAN	Rel-13		C045	E-USS OR NB-SS (see note 2)	AER006	
7.1.9	Adding FPLMN to the forbidden PLMN list when accessing satellite NG-RAN	Rel-17		C063	SAT-NG-SS		
7.1.10	UE updating forbidden PLMNs when accessing satellite NG-RAN	Rel-17		C063	SAT-NG-SS		
7.1.11	UE deleting forbidden PLMNs when accessing satellite NG-RAN in manual mode	Rel-17		C064	SAT-NG-SS		
7.1.12	Adding FPLMN to the forbidden PLMN list when accessing Satellite E-UTRAN in NB-S1 mode	Rel-17		C071	SAT-NB-SS		
7.1.13	UE updating forbidden PLMNs when accessing Satellite E-UTRAN in NB-S1 mode	Rel-17		C071	SAT-NB-SS		
7.1.14	UE deleting forbidden PLMNs when accessing Satellite E-UTRAN in NB-S1 mode in manual mode	Rel-17		C071	SAT-NB-SS		
7.1.15	Adding FPLMN to the forbidden PLMN list when accessing Satellite E-UTRAN in WB-S1 mode	Rel-17		C073	SAT-E-USS		

7.1.16	UE updating forbidden PLMNs when accessing Satellite E-UTRAN in WB-S1 mode	Rel-17		C073	SAT-E-USS		
7.1.17	UE deleting forbidden PLMNs when accessing Satellite E-UTRAN in WB-S1 mode in manual mode	Rel-17		C073	SAT-E-USS		
7.2	User controlled PLMN selector handling						
7.2.1	UE updating the User controlled PLMN selector list	R99		C022			
7.2.2	UE recognising the priority order of the User controlled PLMN selector list with the same access technology	R99	Rel-7	M	USS OR SS	AER005	
		Rel-8		C049			
7.2.3	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference	R99		C009	USS AND SS		
7.2.5	UE updating the User controlled PLMN selector list for E-UTRAN	Rel-8		C022 AND C027			
7.2.6	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference-UTRAN/E-UTRAN	Rel-8		C022 AND C027 AND C048	E-USS AND USS		
7.2.7	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference-GSM/E-UTRAN	Rel-8		C022 AND C027 AND C055	E-USS AND SS		
7.2.8	UE recognising the priority order of the User controlled PLMN selector list with the same access technology – E-UTRAN in NB-S1 mode	Rel-14		C022 AND C046	NB-SS		
7.2.9	UE recognising the priority order of the User controlled PLMN selector list using the ACT preference – E-UTRAN in WB-S1/E-UTRAN in NB-S1	Rel-14		C022 AND C027 AND C046	E_USS AND NB-SS		
7.2.10	UE updating the User controlled PLMN selector list for satellite-NG-RAN	Rel-17		C022 AND C063			
7.2.11	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference GSM/satellite NG-RAN	Rel-17		C022 AND C055 AND C063	SS AND SAT-NG-SS		
7.2.12	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference UTRAN/satellite NG-RAN	Rel-17		C022 AND C048 AND C063	USS AND SAT-NG-SS		
7.2.13	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN/satellite NG-RAN	Rel-17		C022 AND C027 AND C063	E-USS AND SAT-NG-SS		
7.2.14	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference NG-RAN/satellite NG-RAN	Rel-17		C022 AND C056 AND C063	NG-SS AND SAT-NG-SS		
7.2.15	UE updating the User controlled PLMN selector list for Satellite-E-UTRAN in NB-S1 mode	Rel-17		C022 AND C071			
7.2.16	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference GSM/Satellite E-UTRAN in NB-S1 mode	Rel-17		C022 AND C055 AND C071	SS AND SAT-NB-SS		
7.2.17	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference	Rel-17		C022 AND C048 AND C071	USS AND SAT-NB-SS		

	UTRAN/Satellite E-UTRAN in NB-S1 mode						
7.2.18	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN/Satellite E-UTRAN in NB-S1 mode	Rel-17		C022 AND C027 AND C071	E-USS AND SAT-NB-SS		
7.2.19	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN in NB-S1/Satellite E-UTRAN in NB-S1 mode	Rel-17		C022 AND C046 AND C071	NB-SS AND SAT-NB-SS		
7.2.20	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference NG-RAN/Satellite E-UTRAN in NB-S1 mode	Rel-17		C022 AND C056 AND C071	NG-SS AND SAT-NB-SS		
7.2.21	UE updating the User controlled PLMN selector list for Satellite-E-UTRAN in WB-S1 mode	Rel-17		C022 AND C073			
7.2.22	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference GSM/Satellite E-UTRAN in WB-S1 mode	Rel-17		C022 AND C055 AND C073	SS AND SAT-E-USS		
7.2.23	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference UTRAN/Satellite E-UTRAN in WB-S1 mode	Rel-17		C022 AND C048 AND C073	USS AND SAT-E-USS		
7.2.24	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN/Satellite E-UTRAN in WB-S1 mode	Rel-17		C022 AND C027 AND C073	E-USS AND SAT-E-USS		
7.2.25	UE recognising the priority order of the User controlled PLMN selector list using an ACT preference NG-RAN/Satellite E-UTRAN in WB-S1 mode	Rel-17		C022 AND C056 AND C073	NG-SS AND SAT-E-USS		
7.3	Operator controlled PLMN selector handling						
7.3.1	UE recognising the priority order of the Operator controlled PLMN selector list	R99	Rel-7	M	USS OR SS	AER005	
		Rel-8		C049			
7.3.2	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list	R99	Rel-7	M	USS OR SS	AER005	
		Rel-8		C049			
7.3.3	UE recognising the priority order of the Operator controlled PLMN selector list when accessing E-UTRAN	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
7.3.4	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – E-UTRAN	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
7.3.5	UE recognising the priority order of the Operator controlled PLMN selector list when accessing E-UTRAN in NB-S1 mode	Rel-14		C046	NB-SS only		
7.3.6	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – E-UTRAN in NB-S1 mode	Rel-14		C022 AND C046	NB-SS		
7.3.7	UE recognising the priority order of the Operator controlled PLMN	Rel-14		C027 AND C046	E-USS AND NB-SS		

	selector list using the ACT preference – E-UTRAN in NB-S1/ E-UTRAN in WB-S1 mode						
7.3.8	UE recognising the priority order of the Operator controlled PLMN selector list using the ACT preference – E-UTRAN in NB-S1 mode/ GSM	Rel-14		C046 AND C055	NB-SS AND SS		
7.3.9	UE recognising the priority order of the Operator controlled PLMN selector list using the ACT preference – E-UTRAN in WB-S1 mode/GSM	Rel-14		C027 AND C055	E-USS AND SS		
7.3.10	UE recognising the priority order of the Operator controlled PLMN selector list when accessing NG-RAN	Rel-15		C022 AND C027 AND C056	E-USS AND NG-SS		
7.3.11	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – NG-RAN	Rel-15		C022 AND C056	NG-SS		
7.3.12	UE recognising the priority order of the Operator controlled PLMN selector list when accessing satellite NG-RAN	Rel-17		C022 AND C027 AND C063	E-USS AND SAT-NG-SS		
7.3.13	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – satellite NG-RAN	Rel-17		C022 AND C063	SAT-NG-SS		
7.3.14	UE recognising the priority order of the Operator controlled PLMN selector list when accessing Satellite E-UTRAN in NB-S1 mode	Rel-17		C046 AND C071	NB-SS AND SAT-NB-SS		
7.3.15	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – Satellite E-UTRAN in NB-S1 mode	Rel-17		C022 AND C071	SAT-NB-SS		
7.3.16	UE recognising the priority order of the Operator controlled PLMN selector list when accessing Satellite E-UTRAN in WB-S1 mode	Rel-17		C046 AND C073	E-USS AND SAT-E-USS		
7.3.17	UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – Satellite E-UTRAN in WB-S1 mode	Rel-17		C022 AND C073	SAT-E-USS		
7.4	Higher priority PLMN search handling						
7.4.1	UE recognising the search period of the Higher priority PLMN	R99		C010	USS OR SS only	AER005	
7.4.2	GSM/UMTS dual mode UEs recognising the search period of the Higher priority PLMN	R99		C003	USS AND SS		
7.4.3	UE recognising the search period of the Higher priority PLMN – E-UTRAN	Rel-8	Rel-12	C010 AND C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C010 AND C045			
7.4.4	E-UTRAN/EPC capable UEs recognising the search period of the Higher priority PLMN – GSM/E-UTRAN	Rel-8		C003 AND C027	E-USS AND SS		
7.4.5	E-UTRAN/EPC capable UEs recognising the search period of the Higher priority PLMN – UTRAN/E-UTRAN	Rel-8		C011 AND C027	E-USS AND USS		

7.4.6	UE recognising Multiplier Coefficient for Higher Priority PLMN search - satellite-NG-RAN	Rel-17		C063	SAT-NG-SS		
7.4.7	UE recognising the search period of the Higher priority PLMN – NG-RAN	Rel-15		C056	NG-SS		
8	Subscription independent tests						
8.1	Phone book procedures						
8.1.1	Recognition of a previously changed phonebook	R99		C012			
8.1.2	Update of the Phonebook Synchronisation Counter (PSC)	R99		C012			
8.1.3	Phonebook content handling						
8.1.3.1	Handling of BCD number/ SSC content extension	R99	Rel-4	C013		END001	
		Rel-5					
8.1.4	Phonebook selection	R99	Rel-4	C014		END001	
		Rel-5					
8.1.5	Local Phonebook handling	R99	Rel-4	C012		END001	
		Rel-5					
8.2	Short message handling report						
8.2.1	Correct storage of a SM on the USIM	R99		C015	USS OR SS	AER003	
8.2.2	Correct reading of a SM on the USIM	R99		C015	USS OR SS	AER004	
8.2.3	SM memory capacity exceeded handling	R99		C035	USS OR SS		
8.2.4A	Correct storage of an SM on the UICC	Rel-7		C032	USS		
8.2.4B	Correct storage of an SM on the UICC	Rel-8		C031	E-USS		
8.2.5	Correct reading of a SM on the USIM if USIM and ISIM are present	Rel-7		C033			
8.2.6	Correct reading of a SM on the ISIM if USIM and ISIM are present	Rel-7		C034			
8.2.7	Correct storage of an SM on the UICC	Rel-13		C046	NB-SS		
8.3	MMS related tests						
8.3.1	UE recognising the priority order of MMS Issuer Connectivity Parameters	Rel-4	Rel-4	C016	E-USS OR USS OR SS		
		Rel-5		C017			
8.3.2	UE recognising the priority order of MMS User Connectivity Parameters	Rel-4	Rel-4	C016	E-USS OR USS OR SS		
		Rel-5		C017			
8.3.3	UE recognising the priority order of MMS Issuer Connectivity Parameters over the MMS User Connectivity Parameters	Rel-4	Rel-4	C016	E-USS OR USS OR SS		
		Rel-5		C017			
8.3.4	Usage of MMS notification	Rel-4		C018	E-USS OR USS OR SS		
8.4	UICC presence detection	Rel-5	Rel-7	M	USS OR SS	AER001	
		Rel-8		C049			
8.5	UICC presence detection when connected to E-UTRAN/EPC	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
9	USIM service handling						
9.1	Access Point Name Control List handling						
9.1.1	Access Point Name Control List handling for terminals supporting ACL	R99	Rel-4	C019	USS OR SS	END001 AER002	
		Rel-5				AER002	
9.1.2	Network provided APN handling for terminals supporting ACL	R99	Rel-4	C019	USS OR SS	END001 AER002	
		Rel-5				AER002	
9.1.3	Access Point Name Control List handling for terminals not supporting ACL	R99	Rel-4	C020	USS OR SS	END001 AER002	
		Rel-5				AER002	

9.1.4	Access Point Name Control List handling for terminals supporting ACL connected to E-UTRAN/EPC	Rel-8		C050	E-USS		
9.2	Service Dialling Numbers handling	R99	Rel-5	C021	USS OR SS	END001	
		Rel-6					
10	CSG list handling						
10.1	CSG list handling for E-UTRA						
10.1.1	Automatic CSG selection in E-UTRA with CSG list on USIM, success	Rel-8		C028	E-USS		
10.1.2	Automatic CSG selection in E-UTRA with CSG list on USIM, removal of CSG ID from the USIM	Rel-8		C028	E-USS		
10.1.3	Manual CSG selection in E-UTRA with CSG list on USIM, success	Rel-8		C038	E-USS		
10.1.4	Manual CSG selection in E-UTRA with CSG list on USIM, rejected	Rel-8		C038	E-USS		
10.1.5	CSG selection in E-UTRA with no CSG list on USIM, no IMSI change	Rel-8		C038	E-USS		
10.1.6	CSG selection in E-UTRA with no CSG list on USIM, with IMSI change	Rel-8		C038	E-USS		
10.1.7	Manual CSG selection without display restrictions in E-UTRA with ACSI list and OCSI list on USIM	Rel-9		C038	E-USS		
10.1.8	Manual CSG selection with display restrictions in E-UTRA with ACSI list and OCSI list on USIM	Rel-9		C038	E-USS		
10.2	CSG list handling for UTRA						
10.2.1	Manual CSG selection without display restrictions in UTRA with ACSI list and OCSI list on USIM	Rel-9		C037	USS		
10.2.2	Manual CSG selection with display restrictions in UTRA with ACSI list and OCSI list on USIM	Rel-9		C037	USS		
10.2.3	Manual CSG selection in UTRA with CSG list on USIM, success	Rel-8		C037	USS		
11	NAS security context parameter handling						
11.1	NAS security context parameter handling when service "EMM Information" is available	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
11.2	NAS security context parameter handling when service "EMM Information" is not available, no IMSI change	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
11.3	NAS security context parameter handling when service "EMM Information" is not available, IMSI changed	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
11.4	EPS NAS Security Context Storage	Rel-8	Rel-12	C027	E-USS OR NB-SS (see note 2)		
		Rel-13		C045			
12	Non Access Stratum (NAS) Configuration parameter handling						
12.1	EF _{NASCONFIG} – NAS signaling priority handling	Rel-10			see TS 34.123-1		
12.2	EF _{NASCONFIG} – NMO I Network Mode of Operation I handling	Rel-10			see TS 34.123-1		
12.3	EF _{NASCONFIG} – Attach with IMSI handling	Rel-10			see TS 34.123-1		
12.4	EF _{NASCONFIG} – Verifying Minimum Periodic Search Timer	Rel-10			see TS 34.123-1		
12.5	EF _{NASCONFIG} – Extended access barring handling	Rel-10			see TS 34.123-1		
12.6	EF _{NASCONFIG} – Verifying Timer T3245 Behaviour	Rel-10	Rel-11	C043	USS	END001	
		Rel-12					
12.7		Rel-11	Rel-12	C041	USS	END001	

	EF _{NASCONFIG} – Override NAS signalling low priority	Rel-13					
12.8	EF _{NASCONFIG} – Override Extended access barring	Rel-11 Rel-13	Rel-12	C044	USS	END001	
12.9	EF _{NASCONFIG} – Fast First Higher Priority PLMN Search	Rel-12 Rel-13	Rel-12	(see note 1)	USS	END001	
12.10	EF _{NASCONFIG} – E-UTRA Disabling Allowed for EMM cause #15	Rel-12 Rel-13	Rel-12	C040 AND C048 AND C027	E-USS AND USS	END001	
12.11	EF _{NASCONFIG} – SM_RetryWaitTime	Rel-12 Rel-13	Rel-12	C042	USS	END001	
12.12	EF _{NASCONFIG} – No E-UTRA Disabling In 5GS	Rel-17		C027 AND C067	E-USS AND NG SS	END001	
13 UICC interface during PSM							
13.1	UICC interface in PSM handling for E-UTRAN – No UICC deactivation in PSM	Rel-13 Rel-14	Rel-13	C051	E-USS OR NB-SS (see note 2)	END001	
13.2	UICC interface in PSM handling for E-UTRAN – PSM not accepted by E-USS/NB-SS	Rel-13 Rel-14	Rel-13	C051	E-USS OR NB-SS (see note 2)	END001 AER007 AER009 AER007 AER009	
13.3	UICC interface in PSM handling for E-UTRAN – UICC deactivation in PSM	Rel-13 Rel-14	Rel-13	C051	E-USS OR NB-SS (see note 2)	END001 AER007 AER009 AER007 AER009	
13.4	UICC interface in PSM for E-UTRAN – SUSPEND UICC	Rel-14		C051	E-USS OR NB-SS (see note 2)	AER007 AER009	
14 UICC interface during eDRX							
14.1	UICC interface during eDRX for E-UTRAN – eDRX is not supported by the UICC	Rel-13 Rel-14	Rel-13	C052	E-USS OR NB-SS (see note 2)	END001 AER008 AER010 AER008 AER010	
14.2	UICC interface during eDRX for E-UTRAN – eDRX is not accepted by E-USS/NB-SS	Rel-13 Rel-14	Rel-13	C052	E-USS OR NB-SS (see note 2)	END001 AER008 AER010 AER008 AER010	
14.3	UICC interface during eDRX for E-UTRAN – UICC deactivation during eDRX	Rel-13 Rel-14	Rel-13	C052	E-USS OR NB-SS (see note 2)	END001 AER008 AER010 AER008 AER010	
14.4	UICC interface during eDRX for E-UTRAN – SUSPEND UICC	Rel-14		C054	E-USS OR NB-SS (see note 2)	AER008 AER010	
15 Authentication procedure and NAS security context handling for 5G							
15.1 Authentication procedure for EAP-AKA'							
15.1.1	Authentication procedure for EAP-AKA' - Authentication is successful	Rel-15		C056	NG-SS		
15.1A.1	Authentication procedure for EAP-AKA' - Authentication is successful	Rel-16		C056	NG-SS		
15.1.2	Authentication procedure for EAP-AKA' – Authentication is successful - GSM UICC	Rel-15		C056	NG-SS		
15.1.3	Authentication procedure for EAP-AKA' – AUTN fails on the USIM	Rel-15		C056	NG-SS		
15.1.4	Authentication procedure for EAP-AKA' - after SUPI is changed	Rel-15		C056	NG-SS		
15.2 Authentication procedure for 5G AKA							

15.2.1	Authentication procedure for 5G AKA - Authentication is successful	Rel-15		C056	NG-SS		
15.2A.1	Authentication procedure for 5G AKA - Authentication is successful	Rel-16		C056	NG-SS		
15.2.2	Authentication procedure for 5G AKA – Authentication is successful - GSM UICC	Rel-15		C056	NG-SS		
15.2A.2	Authentication procedure for 5G AKA – Authentication is successful - GSM UICC	Rel-16		C056	NG-SS		
15.2.3	Authentication procedure 5G AKA – AUTN fails on the USIM	Rel-15		C056	NG-SS		
15.2.4	Authentication procedure for 5G AKA - after SUPI is changed	Rel-15		C056	NG-SS		
15.2.5	Authentication procedure for registrations on 3GPP access, 5G AKA – Authentication is successful in different PLMNs	Rel-16	-	C056	NG-SS	-	-
15.3	Authentication procedure for 5G AKA over non-3GPP access via N3IWF						
15.3.1	Authentication procedure for 5G AKA over non-3GPP access via N3IWF	Rel-16		C065	NG-SS		
15.4	5G AKA Authentication procedure for Multiple registration over 3GPP access and non-3GPP access						
15.4.1	5G AKA Authentication is successful in the same PLMN over 3GPP access and non-3GPP access	Rel-16		C066	NG-SS		
15.4.2	5G AKA Authentication is successful in the same PLMN over 3GPP access and non-3GPP access, and then 3GPP access on a different PLMN	Rel-16		C066	NG-SS		
16	UE Route Selection Policy (URSP) procedure						
16.1	Pre-configured URSP rules						
16.1.1	Support for URSP by USIM	Rel-16		C058	NG-SS		
16.1.2	Support for URSP by ME	Rel-16		C056	NG-SS		
16.1.3	Support of Signalled URSP	Rel-16		C058	NG-SS		
17	CAG list handling						
17.1	CAG list handling for 5G						
17.1.1	Automatic CAG selection with preconfigured CAG list on USIM	Rel-17		C062	NG-SS		
18	NSSAA procedure with SSIM support						
18.1	SSIM management procedures						
18.1.1	SSIM identification, S-NSSAI list request	Rel-18		C068	NG-SS		
18.1.2	S-NSSAI Authentication status verification procedure, authentication is successful	Rel-18		C068	NG-SS		
18.2	SSIM commands						
18.2.1	AUTHENTICATE command, Identity EAP-Request/EAP-Response messages	Rel-18		C068	NG-SS		
18.2.2	AUTHENTICATE command, other EAP-Request/EAP-Response messages	Rel-18		C068	NG-SS		
18.2.3	AUTHENTICATE command, EAP-Success/EAP-Failure messages	Rel-18		C068	NG-SS		
19	SOR-CMCI						
19.1	SOR-CMCI PDU session						

19.1.1	SOR-CMCI PDU session 'DNN'	Rel-17		C069	NG-SS		
19.1.2	SOR-CMCI PDU session 'S-NSSAI SST and SD'	Rel-17		C069	NG-SS		
19.1.3	SOR-CMCI PDU session with multiple rules 'DNN' and 'S-NSSAI SST and SD'	Rel-17		C069	NG-SS		
20	SENSE						
20.1	Usage of Operator Controlled Signal threshold per ACT (operator enabled SENSE usage) on E-UTRAN	Rel-18		C070	E-USS	AER011	
20.2	Usage of Operator Controlled Signal threshold per ACT (operator disabled SENSE usage) on E-UTRAN	Rel-18		C070	E-USS	AER011	
NOTE: Blank entries indicate the latest valid release at the time of publication of this specification.							

Table B.1: Applicability of tests (continued)

C001	(NOT A.1/3) AND A.1/4	-- (NOT O_UTRAN) AND O_GERAN
C002	A.1/1 AND A.1/3	-- O_CS AND O_UTRAN
C003	A.1/3 AND A.1/4	-- O_UTRAN AND O_GERAN
C004	IF (C001 OR C002) THEN M ELSE N/A	-- (((NOT O_UTRAN) AND O_GERAN) OR (O_CS AND O_UTRAN))
C005	IF A.1/2 THEN M ELSE N/A	-- O_PIN2_ENTRY_FEAT
C006	IF (C001 OR C002) AND A.1/5 AND A.1/18 THEN M ELSE N/A	-- (((NOT O_UTRAN) AND O_GERAN) OR (O_CS AND O_UTRAN) AND O_FDN AND O_Speech_Calls
C007	IF (C001 OR C002) AND A.1/6 AND A.1/18 THEN M ELSE N/A	-- (((NOT O_UTRAN) AND O_GERAN) OR (O_CS AND O_UTRAN)) AND O_AoCC AND O_Speech_Calls
C008	IF (C001 OR C002) AND A.1/6 AND A.1/18 THEN O.1 ELSE N/A	-- (((NOT O_UTRAN) AND O_GERAN) OR (O_CS AND O_UTRAN)) AND O_AoCC AND O_Speech_Calls
C009	IF C003 THEN M ELSE N/A	-- O_UTRAN AND O_GERAN
C010	IF (C001 OR (A.1/3 AND (NOT A.1/4)) OR (C003 AND (NOT A.1/7))) THEN M ELSE N/A	-- (((NOT O_UTRAN) AND O_GERAN) OR (O_UTRAN AND (NOT O_GERAN)) OR (O_UTRAN AND O_GERAN AND (NOT O_HPLMNwACT)))
C011	IF C003 AND A.1/7 THEN M ELSE O	-- O_UTRAN AND O_GERAN AND O_HPLMNwACT
C012	IF A.1/8 THEN M ELSE N/A	-- O_Local_PB
C013	IF A.1/9 THEN M ELSE N/A	-- O_Global_PB

C014	IF A.1/8 AND A.1/9 THEN M ELSE N/A	-- O_Local_PB AND O_Global_PB
C015	IF A.1/10 AND (A.1/3 OR A.1/4) THEN M ELSE N/A	-- O_Store_Received_SMS AND (O_UTRAN OR O_GERAN)
C016	IF A.1/11 AND A.1/12 AND A.1/13 THEN M ELSE N/A	-- O_MMS AND O_MMS_USIM_DATA AND O_NO_USER_MMS_CONF_SELEC
C017	IF A.1/11 AND A.1/13 THEN M ELSE N/A	-- O_MMS AND O_NO_USER_MMS_CONF_SELEC
C018	IF A.1/11 AND A.1/14 THEN M ELSE N/A	-- O_MMS AND O_MMS_NOTIF_STORAGE
C019	IF A.1/15 AND (A.1/3 OR A.1/4) THEN M ELSE N/A	-- O_ACL AND (O_UTRAN OR O_GERAN)
C020	IF (NOT A.1/15) AND (A.1/3 OR A.1/4)M ELSE N/A	-- (NOT O_ACL) AND (O_UTRAN OR O_GERAN)
C021	IF A.1/16 THEN M ELSE N/A	-- O_SDN
C022	IF A.1/17 THEN M ELSE N/A	-- O_EFPLMNwACT_numerical entry
C023	IF A.1/18 THEN M ELSE N/A	-- O_Speech_Calls
C024	IF C004 AND A.1/18 THEN M ELSE N/A	-- ((NOT O_UTRAN) AND O_GERAN) OR (O_CS AND O_UTRAN) AND O_Speech_Calls
C025	IF A.1/19 THEN "Expected Sequence A" M ELSE "Expected Sequence B" M	-- O_PIN_MMI_Strings
C026	IF A.1/2 AND A.1/19 THEN "Expected Sequence A" M	-- (O_PIN2_ENTRY_FEAT AND O_PIN_MMI_Strings)
C027	IF (A.1/20 OR A.1/21) THEN M ELSE N/A	-- pc_eFDD OR pc_eTDD
C028	IF (A.1/20 OR A.1/21) AND A.1/22 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD) AND pc_Allowed_CSG_list
C029	Void	
C030	Void	
C031	IF (A.1/10 AND A.1/23 AND (A.1/20 OR A.1/21)) THEN M ELSE N/A	-- O_Store_Received_SMS AND pc_SM-over-IP receiver AND (pc_eFDD OR pc_eTDD)

C032	IF A.1/10 AND A.1/23 AND A.1/3 THEN M ELSE N/A	-- O_Store_Received_SMS AND pc_SM-over-IP receiver AND O_UTRAN
C033	IF A.1/24 THEN M ELSE N/A	-- pc_USIM_EF_SMS_reading_support_if_USIM_ISIM both present
C034	IF A.1/25 THEN M ELSE N/A	-- pc_ISIM_EF_SMS_reading_support_if_USIM_ISIM both present
C035	IF (A.1/10 AND NOT A.1/26 AND (A.1/3 OR A.1/4)) THEN M ELSE N/A	-- O_Store_Received_SMS AND NOT O_LARGE_SMS_STORAGE AND (O_UTRAN OR O_GERAN)
C036	IF (A.1/20 OR A.1/21) AND A.1/27 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD) AND pc_Multiple_PDN
C037	IF A.1/3 AND A.1/28 AND A.1/29 AND NOT ((A.1/20 OR A.1/21) AND A.1/22) THEN M ELSE N/A	-- O_UTRAN AND pc_CSG AND pc_manual_CSG_selection AND NOT ((pc_eFDD OR pc_eTDD) AND pc_Allowed_CSG_list)
C038	IF (A.1/20 OR A.1/21) AND A.1/22 AND A.1/29 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD) AND pc_Allowed_CSG_list AND pc_manual_CSG_selection
C039	IF A.1/1 AND A.1/30 THEN M ELSE N/A	-- O_CS AND O_PS
C040	IF A.1/33 THEN M ELSE N/A	-- O_EUTRA_Disabling_EMM_cause#15
C041	IF A.1/3 AND A.1/34 THEN M ELSE N/A	-- O_UTRAN AND O_Override_NAS_signalling_low_priority
C042	IF A.1/3 AND A.1/30 THEN M ELSE N/A	-- O_UTRAN AND O_PS
C043	IF A.1/3 AND A.1/35 THEN M ELSE N/A	-- O_UTRAN AND O_T3245
C044	IF A.1/3 AND A.1/36 THEN M ELSE N/A	-- O_UTRAN AND O_Override_EAB
C045	IF A.1/20 OR A.1/21 OR A.1/37 THEN M ELSE N/A	-- pc_eFDD OR pc_eTDD OR pc_NB
C046	IF A.1/37 THEN M ELSE N/A	-- pc_NB
C047	IF (A.1/3 OR A.1/4) AND NOT A.1/38 THEN M ELSE N/A	-- (O_UTRAN OR O_GERAN) AND NOT O_PLMN_specific_attempt_counters
C048	IF A.1/3 THEN M ELSE N/A	-- O_UTRAN
C049	IF A.1/3 OR A.1/4 THEN M ELSE N/A	-- O_UTRAN OR O_GERAN

C050	IF A.1/15 AND (A.1/20 OR A.1/21) THEN M ELSE N/A	-- O_ACL AND (pc_eFDD OR pc_eTDD)
C051	IF (A.1/20 OR A.1/21 OR A.1/37) AND A.1/39 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD OR pc_NB) AND O_PSM_DEAC_UICC
C052	IF (A.1/20 OR A.1/21 OR A.1/37) AND A.1/40 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD OR pc_NB) AND O_eDRX_DEAC_UICC
C053	IF (A.1/20 OR A.1/21 OR A.1/37) AND A.1/41 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD OR pc_NB) AND O_PSM_SUSPEND_UICC
C054	IF (A.1/20 OR A.1/21 OR A.1/37) AND A.1/42 THEN M ELSE N/A	-- (pc_eFDD OR pc_eTDD OR pc_NB) AND O_eDRX_SUSPEND_UICC
C055	IF A.1/4 THEN M ELSE N/A	-- O_GERAN
C056	IF A.1/43 AND A.1/44 THEN M ELSE N/A	-- pc_5GC AND pc_NR
C057	IF A.1/43 AND A.1/44 AND A.1/31 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_Display
C058	IF A.1/43 AND A.1/44 AND A.1/45 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_URSP_by_USIM
C059	IF A.1/43 AND A.1/44 AND A.1/46 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_SUPI_NAI
C060	IF A.1/43 AND A.1/44 AND A.1/47 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND pc_inactiveState
C061	IF A.1/43 AND A.1/44 AND A.1/48 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_multregs_by_USIM
C062	IF A.1/43 AND A.1/44 AND A.1/49 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND pc_CAG
C063	IF A.1/43 AND A.1/50 THEN M ELSE N/A	-- pc_5GC AND pc_nonTerrestrialNetwork_r17
C064	IF A.1/43 AND A.1/50 AND A.1/31 THEN M ELSE N/A	-- pc_5GC AND pc_nonTerrestrialNetwork_r17 AND O_Display
C065	IF A.1/43 AND A.1/44 AND A.1/52 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_NAS_Sig_over_N3IWF
C066	IF A.1/43 AND A.1/44 AND A.1/48 AND A.1/52 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_multregs_by_USIM AND O_NAS_Sig_over_N3IWF

C067	IF A.1/43 AND A.1/44 AND A.1/53 THEN M ELSE N/A	-- pc_5GC AND pc_NR AND O_No E-UTRA_Disabling_In_5GS
C068	IF A.1/43 AND A.1/44 AND A.1/54	-- pc_5GC AND pc_NR AND O_SSIM
C069	IF A.1/43 AND A.1/55 THEN M, ELSE N/A	-- pc_5GC AND pc_SORCMCI
C070	IF A.1/56 AND A.1/58 THEN M ELSE N/A	-- O_SENSE AND pc_Category_M2_EUTRAN
C071	IF A.1/59 THEN M ELSE N/A	-- pc_NB AND pc_NB_ntn_Connectivity_EPC
C072	IF A.1/43 AND A.1/61 THEN M, ELSE N/A	-- pc_5GC AND pc_5GNSWO
C073	IF A.1/60 THEN M ELSE N/A	-- pc_ntn_Connectivity_EPC_CE_ModeA
O.1	IF C002 THEN "Expected Sequence A" M ELSE IF C001 THEN "Expected Sequence B" M	
AER001	IF (A.1/20 OR A.1/21) AND ((A.1/3 OR A.1/4) AND (NOT A.1/18)) THEN R ELSE A	-- (pc_eFDD OR pc_eTDD) AND (O_UTRAN OR O_GERAN) AND (NOT O_Speech_Calls)
AER002	IF (A.1/20 OR A.1/21) AND (A.1/3 OR A.1/4) THEN R ELSE A	-- (pc_eFDD OR pc_eTDD) AND (O_UTRAN OR O_GERAN)
AER003	IF (test 8.2.3 has been PASSED) THEN R ELSE A	
AER004	IF (test 8.2.5 has been PASSED) THEN R ELSE A	
AER005	IF (NOT A.1/3) AND A.1/4 AND (NOT A.1/1) THEN R ELSE A	-- (NOT O_UTRAN) AND ((O_GERAN AND (NOT O_CS))
AER006	If A.1/38 is supported set the implementation specific counter to small value to reduce the test execution time.	
AER007	If A.1/39 is supported, in addition to the test case initial conditions, any specific information or particular UE configurations required to ensure that the UE performs UICC	

	deactivation in PSM shall be provided by the UE manufacturer.
AER008	If A.1/40 is supported, in addition to the test case initial conditions, any specific information or particular UE configurations required to ensure that the UE performs UICC deactivation in eDRX shall be provided by the UE manufacturer
AER009	The value of timers T3324 (T3324_V) and T3412 (T3412_V) shall be provided by the UE manufacturer and shall be set to a value suitable for executing the test cases.
AER010	The value of eDRX (eDRX_V) and PTW (PTW_V) parameters shall be provided by the UE manufacturer and shall be set to a value suitable for executing the test cases.
AER011	If A.1/57 is supported set the implementation specific timer (T _{SENSE}) to small value to reduce the test execution time. (UE manufacture may set this value +CSENSE AT command see 3GPP TS 27.007 [60])
END001	The listed release is the release the tested function is introduced in. A related test sequence introduced in a later release of the test specification is applicable.
NOTE 1: Definition of applicability for this test case is FFS.	
NOTE 2: For Rel-13, if the UE supports NB-IoT, this test case shall be verified by accessing the NB System Simulator (NB-SS).	

4 Default values for UICC

All tests defined in the subsequent clauses apply to Terminals using card types specified in ETSI TS 102 221 [5], unless otherwise stated.

The following sequence of tests confirms:

- a) the correct interpretation of data read from the USIM (Universal Subscriber Identification Module) by the Terminal;
- b) the correct writing of data to the USIM by the Terminal;
- c) the initiation of appropriate procedures by the Terminal;
- d) High level protocols.

All tests apply to the USIM application on the UICC.

A USIM simulator will be required as part of the USS. Alternatively, to perform the logical tests, USIMs programmed with specific data may be used. The USIM data is not defined within the initial conditions of the tests unless it differs from the default values defined below.

4.1 Definition of default values for USIM-Terminal interface testing (Default UICC)

A USIM containing the following default values is used for all tests of this present document unless otherwise stated.

USIM AID value shall follows the PIX coding for '3GPP USIM' from ETSI TS 101 220 [54] annex E.

The service "Non-Access Stratum configuration by USIM" shall not be available unless otherwise specified.

For each data item, the logical default values and the coding within the elementary files (EF) of the USIM follow.

- NOTE 1: Bx represents byte x of the coding.
- NOTE 2: Unless otherwise defined, the coding values are hexadecimal.

4.1.1 Values of the EF's (Default UICC)

4.1.1.1 EF_{IMSI} (IMSI)

Logically: 2460813579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	75	F9	FF	FF

4.1.1.2 EF_{AD} (Administrative Data)

Logically:
Mode of operation: normal operation
Additional information: ciphering indicator feature disabled
Length of MNC in the IMSI: 3 digit

Coding:	B1	B2	B3	B4
Hex	00	00	00	03

4.1.1.3 EF_{LOCi} (Location Information)

Logically: LAI-MCC: 246
 LAI-MNC: 081
 LAI-LAC: 0001
 TMSI: "FF .. FF"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	FF	FF	FF	FF	42	16	80	00	01	FF	00

4.1.1.4 EF_{Keys} (Ciphering and Integrity Keys)

Logically: Key Set Identifier KSI: 0x
 Ciphering Keys CK: xx
 Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B30	B31	B32	B33
Hex	0x	xx	xx	...	xx	xx	xx	...	xx	xx	xx	xx

4.1.1.5 EF_{KeysPS} (Ciphering and Integrity Keys for Packet Switched domain)

Logically: Key Set Identifier KSI: 0x
 Ciphering Keys CK: xx
 Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	0x	xx	xx	...	xx	xx	xx	...	xx	xx	xx

4.1.1.6 EF_{ACC} (Access Control Class)

Logically: One and one access class from 0 – 9, e.g. class 7 for which the coding is "00 80".

4.1.1.7 EF_{FPLMN} (Forbidden PLMNs)

Besides of the 4 mandatory EF_{FPLMN} 2 optional EF_{FPLMN} are defined according to TS 31.102 [4], clause 4.2.16.

Logically: PLMN1: 234 001 (MCC MNC)
 PLMN2: 234 002
 PLMN3: 234 003
 PLMN4: 234 004
 PLMN5: 234 005
 PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

4.1.1.8 EF_{UST} (USIM Service Table)

Logically:

Service n°1:	Local Phone Book	available
Service n°2:	Fixed Dialling Numbers (FDN)	available

Service n°6:	Barred Dialling Numbers (BDN)	available
Service n°17:	Group Identifier Level 1	not available
Service n°18:	Group Identifier Level 2	not available
Service n°20:	User controlled PLMN selector with Access Technology	available
Service n°27:	GSM Access	available
Service n°33:	shall be set to '1'	available
Service n°34:	Enabled Services Table	available

Coding:	B1	B2	B3	B4	B5
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

4.1.1.9 EF_{EST} (Enable Service Table)

Logically:

Service n°1:	Fixed Dialling Numbers (FDN)	deactivated
Service n°2:	Barred Dialling Numbers (BDN)	deactivated
Service n°3:	APN Control List (ACL)	deactivated

Coding:	B1
Binary	xxxx x000

The coding of EF_{EST} shall conform with the capabilities of the USIM, unused Bits are set to '0'.

4.1.1.10 EF_{ADN} (Abbreviated Dialling Number)

Logically:

At least 10 records, each non empty record unique.

Record 1:	Length of alpha identifier:	32 characters;
	Alpha identifier:	"ABCDEFGH IJKLMNOPQRSTUVWXYZ ABCDEF";
	Length of BCD number:	"03";
	TON and NPI:	Telephony and Unknown;
	Dialled number:	123;
	CCI:	None;
	Ext1:	None.

Record 1:

Coding:	B1	B2	B3	...	B32	B33	B34	B35	B36	B37	B38	B39	...	B46
Hex	41	42	43	...	46	03	81	21	F3	FF	FF	FF	...	FF

4.1.1.11 EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Besides of the 8 mandatory PLMNwACT entries 4 optional PLMNwACT entries are defined according to TS 31.102 [4], clause 4.2.5. The Radio Access Technology identifier for the first two PLMN (1st PLMN and 2nd PLMN) are set to both UTRAN and GSM, all other PLMN to UTRAN only.

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	UTRAN
	2 nd PLMN:	244 081
	2 nd ACT:	GSM
	3 rd PLMN:	244 082
	3 rd ACT:	UTRAN
	4 th PLMN:	244 082
	4 th ACT:	GSM
	5 th PLMN:	244 003

5th ACT: UTRAN
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 006
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	80	00	42	14	80	00	80	42	24	80	80	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	80	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	64	00	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	80	00	42	94	00	80	00	42	04	10	80	00

4.1.1.12 EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

The Radio Access Technology identifier for the first PLMN is set to both UTRAN and GSM, the other remaining PLMNs to UTRAN only.

Logically: 1st PLMN: 254 001 (MCC MNC)
 1st ACT: UTRAN
 2nd PLMN: 254 001
 2nd ACT: GSM
 3rd PLMN: 254 002
 3rd ACT: UTRAN
 4th PLMN: 254 003
 4th ACT: UTRAN
 5th PLMN: 254 004
 5th ACT: UTRAN
 6th PLMN: 254 005
 6th ACT: UTRAN
 7th PLMN: 254 006
 7th ACT: UTRAN
 8th PLMN: 254 007
 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	80	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	80	00	52	34	00	80	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

4.1.1.13 Void

4.1.1.14 PIN

Key reference: 01

Logically: 2468

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	32	34	36	38	FF	FF	FF	FF

4.1.1.15 PIN2

Key reference: 81

Logically: 3579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	33	35	37	39	FF	FF	FF	FF

4.1.1.16 Unblock PIN

Key reference: 01

Logically: 13243546

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	31	33	32	34	33	35	34	36

4.1.1.17 Unblock PIN2

Key reference: 81

Logically: 08978675

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	30	38	39	37	38	36	37	35

4.1.1.18 Other Values of the USIM

All other values of EFs provided by the USIM shall be set to the default values defined in the annex E of TS 31.102 [4]. Some EFs (like the GSM Access files) may necessary for some tests and apply only to those test cases.

4.1.1.19 EF_{PSLOCI} (Packet Switch Location Information)

Logically: RAI-MCC: 246
RAI-MNC: 081
RAI-LAC: 0001
RAI-RAC: 05
P-TMSI: "FF....FF"
P-TMSI signature value: "FF...FF"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	FF	FF	FF	FF	FF	FF	FF	42	16	80	00

Coding:	B12	B13	B14
Hex	01	05	00

4.1.1.20 Universal PIN

Key reference: 11

Logically: 2839

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	32	38	33	39	FF	FF	FF	FF

4.1.1.21 Unblock Universal PIN

Key reference: 11

Logically: 02030405

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	30	32	30	33	30	34	30	35

4A Default values for NG-SS and UE configurations

4A.1 Default NG-SS and UE configuration for different usage settings

For 'voice centric' usage, NG-SS shall support IMS voice over PS session over 3GPP access and the IMS SIP Registration procedure, in accordance with clauses 4A.2 and 4A.3. IMS specific configuration as defined in clause 4A.4 shall be used in the UE.

For 'data centric' usage, NG-SS may not support IMS voice over PS session over 3GPP access as in clause 4A.2.2 and only the clause 4A.2.1 may be applicable. UE may attempt to initiate a PDU Session establishment for IMS and it is up to NG-SS implementation to accept it and perform IMS registration procedure as in clause 4A.2 or reject the PDU Session establishment. IMS specific configuration as defined in clause 4A.4 may be used in the UE.

Depending on the optional feature `pc_ue_usage_voice_centric` as defined in clause 3.7 test system shall switch the test case behaviour to 'voice centric' or 'data centric'.

4A.2 Default NG-SS configuration for 3GPP access with IMS service

4A.2.1 Default NG-SS configuration for IMS Registration support

NG-SS is configured with the IMSI within the USIM application, the P-CSCF address, the home domain name, public and private user identities together with the shared secret key of IMS AKA algorithm, related to the IMS private user identity (IMPI) that is configured on the ISIM UICC.

- NG-SS is listening to SIP default port 5060 for both UDP and TCP protocols.
- NG-SS is able to perform IMS AKA authentication for the IMPI, according to 3GPP TS 33.203 [xx] clause 6.1.
- SIB 1 in NG-SS Cell shall not include `uac-BarringInfo` with `UAC_BarringInfo` for AccessCategory 9, IMS Signalling.

4A.2.2 Default NG-SS configuration for PS voice support

Following parameters apply to all the 5G test cases in voice centric usage.

- 5GS network feature support element includes 'IMS voice over PS session over 3GPP access indicator' (IMS-VoPS-3GPP) in the REGISTRATION ACCEPT.

4A.3 Default NG-SS procedure for 5G Registration on 3GPP access with IMS service

The NG-SS and UE shall perform 5G Registration procedure and IMS SIP Registration procedure as per the generic procedure defined in this clause.

5G-NR generic procedure for 5G Registration on 3GPP access with IMS service defined in Annex Z.1 shall be the default procedure for 5G Registration on 3GPP access with IMS service.

Steps under the Procedure in each 5G test case may describe only the steps necessary for the Test Purpose. However, in voice centric usage, NG-SS and UE shall support additional steps defined in Annex B.

4A.4 Default UE configuration for IMS service

UE shall be configured with the DNN type as 'ims' and DNN as IMS.

IMS private user identity, Home Network Domain Name, IMS public user identity, and P-CSCF Address required for IMS SIP Registration shall be configured in the 5G-NR ISIM-UICC as defined in clause 4.13.

4.2 Definition of FDN UICC

The FDN test cases require a different configuration than the one described in clause 4.1. For that purpose a default FDN UICC is defined. In general the values of the FDN UICC are identical to the default UICC, with the following exceptions.

4.2.1 Values of the EF's (FDN UICC)

4.2.1.1 EF_{UST} (USIM Service Table)

Settings from clause 4.1 (Default UICC) of the present document apply.

4.2.1.2 EF_{EST} (Enable Service Table)

Logically:

Settings from clause 4.1 (Default UICC) of the present document apply with the following changes:

Service n°1: Fixed Dialling Numbers (FDN) activated

Coding:	B1
Binary	xxxx x001

The coding of EF_{EST} shall conform with the capabilities of the USIM, unused Bits are set to '0'..

4.2.1.3 EF_{FDN} (Fixed Dialling Numbers)

Logically:

Record 1: Length of alpha identifier: 6 characters;
 Alpha identifier: "FDN111";
 Length of BCD number: "06";
 TON and NPI: Telephony and International;
 Dialed number: +1357924680;
 CCI2: None;
 Ext2: None.

Coding for record 1:

Hex	B1 46	B2 44	B3 4E	B4 31	B5 31	B6 31	B7 06	B8 91	B9 31	B10 75	B11 29	B12 64	B13 08
	B14 FF	B15 FF	B16 FF	B17 FF	B18 FF	B19 FF	B20 FF						

Record 2: Length of alpha identifier: 6 characters;
 Alpha identifier: "FDN222";
 Length of BCD number: "04";
 TON and NPI: Telephony and Unknown;
 Dialed number: 24680;
 CCI2: None;
 Ext2: None.

Coding for record 2:

Hex	B1 46	B2 44	B3 4E	B4 32	B5 32	B6 32	B7 04	B8 81	B9 42	B10 86	B11 F0	B12 FF	B13 FF
	B14 FF	B15 FF	B16 FF	B17 FF	B18 FF	B19 FF	B20 FF						

Record 3: Length of alpha identifier: 6 characters;
 Alpha identifier: "FDN333";
 Length of BCD number: "0B";
 TON and NPI: Telephony and International;
 Dialed number: +12345678901234567890;
 CCI2: None;
 Ext2: None.

Coding for record 3:

Hex	B1 46	B2 44	B3 4E	B4 33	B5 33	B6 33	B7 0B	B8 91	B9 21	B10 43	B11 65	B12 87	B13 09
	B14 21	B15 43	B16 65	B17 87	B18 09	B19 FF	B20 FF						

4.2.1.4 EF_{ECC} (Emergency Call Codes)

Logically: Emergency call code: "122";
 Emergency call code alpha identifier: "TEST";
 Emergency call Service Category: Mountain Rescue.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	21	F2	FF	54	45	53	54	10

4.2.1.5 Other Values of the USIM

All other values of EFs provided by the USIM shall be set to the default values defined in the annex E of TS 31.102 [4]. Some EFs (like the GSM Access files) may necessary for some tests and apply only to those test cases.

4.3 Void

4.4 Definition of E-UTRAN/EPC UICC

The E-UTRAN/EPC test cases require a different configuration than the one described in clause 4.1. For that purpose a default E-UTRAN/EPC UICC is defined. In general the values of the E-UTRAN/EPC UICC are identical to the default UICC, with the following exceptions:

4.4.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.1 (Default UICC) of the present document apply with the following changes:

Service n°85:	EPS Mobility Management Information	available
Service n°86:	Allowed CSG Lists and corresponding indications	available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx11 xxxx					

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

4.4.2 EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24608100010266431122
 Last visited registered TAI: 246/081/0001
 EPS update status: not updated

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex:	0B	F6	42	16	80	00	01	02	66	43	11
	B12	B13	B14	B15	B16	B17	B18				
	22	42	16	80	00	01	01				

4.4.3 EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Besides of the 8 mandatory PLMNwACT entries 4 optional PLMNwACT entries are defined according to TS 31.102 [4], clause 4.2.5. The Radio Access Technology identifiers are set either to E-UTRAN only, UTRAN only or GSM only.

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	E-UTRAN
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	E-UTRAN
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN

8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

4.4.4 EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

The Radio Access Technology identifier for the first PLMN is set to both UTRAN and GSM, the other remaining PLMNs to UTRAN only or E-UTRAN only.

Logically: 1st PLMN: 254 001 (MCC MNC)
 1st ACT: E-UTRAN
 2nd PLMN: 254 001
 2nd ACT: GSM
 3rd PLMN: 254 002
 3rd ACT: E-UTRAN
 4th PLMN: 254 003
 4th ACT: E-UTRAN
 5th PLMN: 254 004
 5th ACT: UTRAN
 6th PLMN: 254 005
 6th ACT: UTRAN
 7th PLMN: 254 006
 7th ACT: UTRAN
 8th PLMN: 254 007
 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	40	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	34	00	40	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

4.4.5 EF_{ACSGL} (Allowed CSG Lists)

For testing 2 CSG lists are defined and stored together in record one.

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
 1st CSG list 1st CSG Type indication 02
 1st CSG list 1st CSG HNB Name indication 02
 1st CSG list 1st CSG CSG ID: 02 (27bit)
 1st CSG list 2nd CSG Type indication 03
 1st CSG list 2nd CSG HNB Name indication 03
 1st CSG list 2nd CSG CSG ID: 03 (27bit)

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	A0	15	80	03	42	16	80	81	06	02
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	02	00	00	00	5F	81	06	03	03	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	00	00	7F	A0	0D	80	03	42	14	80
	B31	B32	B33	B34	B35	B36	B37	B38	B39	..
	81	06	08	08	00	00	01	1F	FF	FF
	Bxx									
	FF									

All other records are empty.

4.4.6 EF_{CSGT} (CSG Type)

Record 1:

Logically: Group ONE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	4F	00	4E	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 2:

Logically: Group TWO

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	54	00	57	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	4F	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: Group THREE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	54	00	48	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	00	45	00	45	FF	FF	FF	FF	FF

Record 4:

Logically: Group FOUR

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	15	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	46	00	4F	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	55	00	52	FF	FF	FF	FF	FF	FF	FF

Record 5:

Logically: Group FIVE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	15	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	46	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	56	00	45	FF	FF	FF	FF	FF	FF	FF

Record 6:

Logically: Group SIX

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	53	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	58	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 7:

Logically: Group SEVEN

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20

75	00	70	00	20	00	53	00	45	00
B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
56	00	45	00	4E	FF	FF	FF	FF	FF

Record 8:

Logically: Group EIGHT

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	45	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	47	00	48	00	54	FF	FF	FF	FF	FF

4.4.7 EF_{HNB}N (Home (e)NodeB Name)

Record 1:

Logically: Home ONE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	4F	00	4E	00	45	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 2:

Logically: Home TWO

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	54	00	57	00	4F	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: Home THREE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	54	00	48	00	52	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	00	45	FF	FF	FF	FF	FF	FF	FF

Record 4:

Logically: Home FOUR

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	13	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	46	00	4F	00	55	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 5:

Logically: Home FIVE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	13	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	46	00	49	00	56	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 6:

Logically: Home SIX

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	53	00	49	00	58	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 7:

Logically: Home SEVEN

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	53	00	45	00	56	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	00	4E	FF	FF	FF	FF	FF	FF	FF

Record 8:

Logically: Home EIGHT

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	45	00	49	00	47	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	48	00	54	FF	FF	FF	FF	FF	FF	FF

4.4.8 EF_{EPSNSC} (EPS NAS Security Context)

Logically:

Key Set Identifier KSI _{ASME} :	'07' (no key available)
ASME Key (KSI _{ASME}):	32 byte key, any value
Uplink NAS count:	'00'
Downlink NAS count:	'01'
Identifiers of selected NAS	
integrity and encryption algorithm:	'01'

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Coding:	A0	34	80	01	07	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54					
	00	01	84	01	01					

4.5 Definition of E-UTRAN/EPC ISIM-UICC

4.5.1 Applications on the E-UTRAN/EPC ISIM-UICC

The E-UTRAN/EPC ISIM-UICC shall contain a USIM as defined in clause 4.5.2 and an ISIM as defined in clause 4.5.3.

4.5.2 Default USIM values on E-UTRAN/EPC ISIM-UICC

The E-UTRAN/EPC ISIM-UICC related test cases require a USIM to access the E-UTRAN/EPC. For this purpose the USIM shall be configured as defined in clause 4.4.

4.5.3 Default ISIM values on E-UTRAN/EPC ISIM-UICC

The E-UTRAN/EPC ISIM-UICC shall contain an ISIM for IMS access with the following values:

4.5.3.1 EF_{AD} (Administrative Data)

Logically: Normal Operation

Byte:	B1	B2	B3
Coding:	00	00	00

4.5.3.2 EF_{IST} (ISIM Service Table)

Logically:

Service n°1:	P-CSCF address	available
Service n°2:	Generic Bootstrapping Architecture (GBA)	not available
Service n°3:	HTTP Digest	not available
Service n°4:	GBA-based Local Key Establishment Mechanism	not available
Service n°5:	Support of P-CSCF discovery for IMS Local Break Out	not available
Service n°6:	Short Message Storage (SMS)	available
Service n°7:	Short Message Status Reports (SMSR)	available
Service n°8:	Support for SM-over-IP including data download via SMS-PP as defined in TS 31.111	available

Coding:	B1

Binary:	1110 0001

4.5.3.3 EF_{IMPI} (IMS private user identity)

Logically: 001010123456789@test.3gpp.com

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	1D	30	30	31	30	31	30	31	32
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	33	34	35	36	37	38	39	40	74	65
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	73	74	2E	33	67	70	70	2E	63	6F
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	6D	FF	FF	FF	FF	FF	FF	FF	FF	FF

4.5.3.4 EF_{DOMAIN} (Home Network Domain Name)

Logically: test.3gpp.com

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	0D	74	65	73	74	2E	33	67	70
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	70	2E	63	6F	6D	FF	FF	FF	FF	FF

4.5.3.5 EF_{IMPU} (IMS public user identity)

Record 1 :

Logically: <sip:001010123456789@ims.mnc246.mcc081.3gppnetwork.org>

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	35	73	69	70	3A	30	30	31	30
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	31	30	31	32	33	34	35	36	37	38
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	39	40	69	6D	73	2E	6D	6E	63	32
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	34	36	2E	6D	63	63	30	38	31	2E
	B41	B42	B43	B44	B45	B46	B47	B48	B49	B50
	33	67	70	70	6E	65	74	77	6F	72
	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	6B	2E	6F	72	67	FF	FF	FF	FF	FF

Record 2:

Logically: sip:+11234567890@test.3gpp.com

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	1E	73	69	70	3A	2B	31	31	32
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	33	34	35	36	37	38	39	30	40	74
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	65	73	74	2E	33	67	70	70	2E	63
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	6F	6D	FF	FF	FF	FF	FF	FF	FF	FF
	B41	B42	B43	B44	B45	B46	B47	B48	B49	B50
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: sip: user@test.3gpp.com

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	16	73	69	70	3A	75	73	65	72
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	40	74	65	73	74	2E	33	67	70	70
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	2E	63	6F	6D	FF	FF	FF	FF	FF	FF
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B41	B42	B43	B44	B45	B46	B47	B48	B49	B50
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

4.5.3.6 EF_{P-CSCF} (P-CSCF ADDRESS)

Logically:

Address Type: FQDN

P-CSCF Address: pcscf1.anyims.test.3gpp.com

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	1C	00	70	63	73	63	66	31	2E
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	61	6E	79	69	6D	73	2E	74	65	73
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	74	2E	33	67	70	70	2E	63	6F	6D
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Note: This EF does not apply for 3GPP and shall not be used by a terminal using a 3GPP access network or a 3GPP Interworking WLAN.

4.5.3.7 EF_{SMS} (Short Message Service)

At least 10 records.

All records shall be empty.

Logically: Status byte set to empty.

Record 1-x ($x \geq 10$):

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Coding:	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

4.5.3.8 EF_{SMSR} (Short message status reports)

This EF shall contain as many records as EF_{SMS}.

All records shall be empty.

Logically: Status byte set to empty.

Record 1-x ($x \geq 10$):

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10

Coding:	00	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

4.5.3.9 EF_{SMSP} (Short message service parameters)

Logically:

Record 1:

Record length: 28 bytes

Parameter Indicators:

TP-Destination Address: Parameter absent

TS-Service Centre Address: Parameter present

TP-Protocol Identifier: Parameter absent

TP-Data Coding Scheme: Parameter absent

TP-Validity Period: Parameter absent

TS-Service Centre Address:

TON: International Number

NPI: "ISDN / telephone numbering plan"

Dialled number string: "112233445566778"

Byte:	B1	B2	B3	...	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23
Coding:	FD	FF	FF	...	FF	09	91	11	22	33	44	55	66	77	F8
	B24	B25	B26	B27	B28										
	FF	FF	FF	FF	FF										

All other records shall be empty.

4.5.3.10 EF_{SMSS} (SMS Status)

Logically: Last used TP-MR set to "00".
Memory capacity available (flag unset b1="1").

Byte:	B1	B2
Coding:	00	FF

4.5.4 Default values at DF_TELECOM

4.5.4.1 EF_{PSISMSC} (Public Service Identity of the SM-SC)

1 record only.

Logically:

Record 1:

Public Service Identity of the SM-SC: <tel:+112233445566778>

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	14	74	65	6C	3A	2B	31	31	32
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	32	33	33	34	34	35	35	36	36	37
	B21	B22	B23	B24	B25	B26	B27	B28	...	Bxx
	37	38	FF	FF	FF	FF	FF	FF	...	FF

4.6 Definition of ACSGL/OCSGL E-UTRAN/EPC UICC

The ACSGL/OCSGL E-UTRAN/EPC test cases require a different configuration than the one described in clause 4.4. For that purpose a default ACSGL/OCSGL E-UTRAN/EPC UICC is defined. In general the values of the ACSGL/OCSGL E-UTRAN/EPC UICC are identical to the E-UTRAN/EPC UICC, with the following exceptions:

4.6.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.1 (Default UICC) of the present document apply with the following changes:

Service n°85:	EPS Mobility Management Information	available
Service n°86:	Allowed CSG Lists and corresponding indications	available
Service n°90:	Operator CSG Lists and corresponding indications	available
Service n°92:	Support of CSG Display Control	available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	B12				
	xxxx xxxx	xxxx xxxx	xx11 xxxx	xxxx 1x1x				

The coding of EF_{UST} shall conform to the capabilities of the USIM used.

4.6.2 EF_{AD} (Administrative Data)

Logically:

Mode of operation:	normal operation
Additional information:	ciphering indicator feature disabled
	all available CSGs can be displayed without any restriction (b2)
Length of MNC in the IMSI:	3 digit

Coding:	B1	B2	B3	B4
Hex	00	00	00	03

4.6.3 EF_{OCSGL} (Operator CSG Lists)

For testing 2 CSG lists are defined and stored together in record one.

Logically:

1st CSG list

PLMN:	246 081 (MCC MNC)
1 st CSG list	1 st CSG Type indication 01
1 st CSG list	1 st CSG HNB Name indication 01
1 st CSG list	1 st CSG CSG ID: 01 (27bit)
1 st CSG list	2 nd CSG Type indication 05
1 st CSG list	2 nd CSG HNB Name indication 05
1 st CSG list	2 nd CSG CSG ID: 05 (27bit)
CSG display indicator:	All available CSG Ids can be displayed during a manual CSGselection 00

2nd CSG list

PLMN:	244 081 (MCC MNC)
2 nd CSG list	1 st CSG Type indication 07
2 nd CSG list	1 st CSG HNB Name indication 07
2 nd CSG list	1 st CSG CSG ID: 07 (27bit)

CSG display indicator: All available CSG Ids can be displayed during a manual CSGselection 00

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	A0	18	80	03	42	16	80	81	06	01
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	01	00	00	00	3F	81	06	05	05	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	00	00	BF	82	01	00	A0	10	80	03
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	42	14	80	81	06	07	07	00	00	00
	B41	B42	B43	B44						
	FF	82	01	00						

All other records are empty.

4.6.4 EF_{OCSGT} (Operator CSG Type)

Record 1:

Logically: OMode ONE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	4F	00	4D	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	64	00	65	00	20	00	4F	00	4E	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 2:

Logically: OMode TWO

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	4F	00	4D	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	64	00	65	00	20	00	54	00	57	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	4F	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: OMode THREE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	4F	00	4D	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	64	00	65	00	20	00	54	00	48	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	00	45	00	45	FF	FF	FF	FF	FF

Record 4:

Logically: OMode FOUR

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	15	80	00	4F	00	4D	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	64	00	65	00	20	00	46	00	4F	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30

55	00	52	FF	FF	FF	FF	FF	FF	FF

Record 5:

Logically: Group FIVE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	15	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	46	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	56	00	45	FF	FF	FF	FF	FF	FF	FF

Record 6:

Logically: Group SIX

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	53	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	58	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 7:

Logically: Group SEVEN

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	53	00	45	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	56	00	45	00	4E	FF	FF	FF	FF	FF

Record 8:

Logically: Group EIGHT

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	45	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	47	00	48	00	54	FF	FF	FF	FF	FF

4.6.5 EF_{OHNB}N (Operator Home (e)NodeB Name)

Record 1:

Logically: Home ONE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	4F	00	4E	00	45	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 2:

Logically: Home TWO

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	54	00	57	00	4F	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: Home THREE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	54	00	48	00	52	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	00	45	FF	FF	FF	FF	FF	FF	FF

Record 4:

Logically: Home FOUR

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	13	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	46	00	4F	00	55	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 5:

Logically: Home FIVE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	13	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	46	00	49	00	56	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 6:

Logically: Home SIX

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	53	00	49	00	58	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 7:

Logically: Home SEVEN

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	53	00	45	00	56	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30

45	00	4E	FF	FF	FF	FF	FF	FF	FF

Record 8:

Logically: Home EIGHT

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	45	00	49	00	47	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	48	00	54	FF	FF	FF	FF	FF	FF	FF

4.7 Definition of Non Access Stratum Configuration UICC

In general the values of the UICC configuration are identical to the default UICC, with the following exceptions:

4.7.1 Values of the EFs

4.7.1.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.1 (Default UICC) of the present document apply with the following changes:

Service n°96: Non-Access Stratum configuration by USIM available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	B12				
	xxxx xxxx	xxxx xxxx	xxxx xxxx	1xxx xxxx				

The coding of EF_{UST} shall conform to the capabilities of the USIM used.

4.7.1.2 EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value: 00
 NMO I Behaviour value: 00
 Attach with IMSI value: 00
 Minimum Periodic Search Timer value: 00
 Extended access barring value: 00
 Timer T3245 Behaviour value: 00

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	01	00	81	01	00	82	01	00	83
	B11	B12	B13	B14	B15	B16	B17	B18		
	01	00	84	01	00	85	01	00		

4.8 Definition of Non Access Stratum Configuration of E-UTRAN/EPC UICC

In general the values of the UICC configuration are identical to the default UICC, with the following exceptions:

4.8.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.1 (Default UICC) of the present document apply with the following changes:

Service n°85:	EPS Mobility Management Information	available
Service n°86:	Allowed CSG Lists and corresponding indications	available
Service n°96:	Non-Access Stratum configuration by USIM	available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	B12				
	xxxx xxxx	xxxx xxxx	xx11 xxxx	1xxx xxxx				

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

4.8.2 EF_{EPSLOCI} (EPS Information)

Logically: GUTI: 24608100010266431122
 Last visited registered TAI: 246/081/0001
 EPS update status: not updated

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex:	0B	F6	42	16	80	00	01	02	66	43	11
	B12	B13	B14	B15	B16	B17	B18				
	22	42	16	80	00	01	01				

4.8.3 EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Besides of the 8 mandatory PLMNwACT entries 4 optional PLMNwACT entries are defined according to TS 31.102 [4], clause 4.2.5. The Radio Access Technology identifiers are set either to E-UTRAN only, UTRAN only or GSM only.

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	E-UTRAN
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	E-UTRAN
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010

12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

4.8.4 EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

The Radio Access Technology identifier for the first PLMN is set to both UTRAN and GSM, the other remaining PLMNs to UTRAN only or E-UTRAN only.

Logically:

- 1st PLMN: 254 001 (MCC MNC)
- 1st ACT: E-UTRAN
- 2nd PLMN: 254 001
- 2nd ACT: GSM
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 003
- 4th ACT: E-UTRAN
- 5th PLMN: 254 004
- 5th ACT: UTRAN
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	40	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	34	00	40	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

4.8.5 EF_{ACSGL} (Allowed CSG Lists)

For testing 2 CSG lists are defined and stored together in record one.

Logically:

1st CSG list

- PLMN: 246 081 (MCC MNC)
- 1st CSG list 1st CSG Type indication 02
- 1st CSG list 1st CSG HNB Name indication 02
- 1st CSG list 1st CSG CSG ID: 02 (27bit)
- 1st CSG list 2nd CSG Type indication 03
- 1st CSG list 2nd CSG HNB Name indication 03
- 1st CSG list 2nd CSG CSG ID: 03 (27bit)

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	A0	15	80	03	42	16	80	81	06	02
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	02	00	00	00	5F	81	06	03	03	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	00	00	7F	A0	0D	80	03	42	14	80
	B31	B32	B33	B34	B35	B36	B37	B38	B39	..
	81	06	08	08	00	00	01	1F	FF	FF
	Bxx									
	FF									

All other records are empty.

4.8.6 EF_{CSGT} (CSG Type)

Record 1:

Logically: Group ONE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	4F	00	4E	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 2:

Logically: Group TWO

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	54	00	57	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	4F	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: Group THREE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	54	00	48	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	00	45	00	45	FF	FF	FF	FF	FF

Record 4:

Logically: Group FOUR

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	15	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	46	00	4F	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30

55	00	52	FF	FF	FF	FF	FF	FF	FF

Record 5:

Logically: Group FIVE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	15	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	46	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	56	00	45	FF	FF	FF	FF	FF	FF	FF

Record 6:

Logically: Group SIX

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	13	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	53	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	58	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 7:

Logically: Group SEVEN

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	53	00	45	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	56	00	45	00	4E	FF	FF	FF	FF	FF

Record 8:

Logically: Group EIGHT

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	89	17	80	00	47	00	72	00	6F	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	75	00	70	00	20	00	45	00	49	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	47	00	48	00	54	FF	FF	FF	FF	FF

4.8.7 EF_{HNB}N (Home (e)NodeB Name)

Record 1:

Logically: Home ONE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	4F	00	4E	00	45	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 2:

Logically: Home TWO

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	54	00	57	00	4F	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 3:

Logically: Home THREE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	54	00	48	00	52	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	00	45	FF	FF	FF	FF	FF	FF	FF

Record 4:

Logically: Home FOUR

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	13	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	46	00	4F	00	55	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 5:

Logically: Home FIVE

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	13	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	46	00	49	00	56	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	45	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 6:

Logically: Home SIX

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	11	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	53	00	49	00	58	FF
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Record 7:

Logically: Home SEVEN

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	53	00	45	00	56	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30

45	00	4E	FF	FF	FF	FF	FF	FF	FF

Record 8:

Logically: Home EIGHT

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	15	80	00	48	00	6F	00	6D	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	65	00	20	00	45	00	49	00	47	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	48	00	54	FF	FF	FF	FF	FF	FF	FF

4.8.8 EF_{EPSNSC} (EPS NAS Security Context)

Logically: Key Set Identifier KSI_{ASME}: '07' (no key available)
ASME Key (KSI_{ASME}): 32 byte key, any value
Uplink NAS count: '00'
Downlink NAS count: '01'
Identifiers of selected NAS
integrity and encryption algorithm: '01'

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Coding:	A0	34	80	01	07	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54					
	00	01	84	01	01					

4.8.9 EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value:	Reserved (NAS signalling low priority is not used)
NMO I Behaviour value:	"NMO I, Network Mode of Operation I" indication is not used
Attach with IMSI value:	normal behaviour is applied
Minimum Periodic Search Timer value:	00
Extended access barring value:	extended access barring is not applied for the UE
Timer T3245 Behaviour value:	T3245 not used
Override NAS signalling low priority:	Indicates that the UE cannot override the NAS signalling low priority indicator
Override Extended access barring:	Indicates that the UE cannot override extended access barring
Fast First Higher Priority PLMN Search:	Indicates that the Fast First Higher Priority PLMN Search is not enabled
EUTRA Disabling Allowed For EMM Cause15:	disabled
SM_RetryWaitTime:	00
SM_RetryAtRATChange:	UE is allowed to retry the corresponding ESM procedure in S1 mode if an SM procedure was rejected in A/Gb or Iu mode, and to retry the corresponding SM procedure in A/Gb or Iu mode if an ESM procedure was rejected in S1 mode.
Exception Data Reporting Allowed:	Indicates whether the UE in NB-S1 mode is allowed to use the RRC establishment cause mo-ExceptionData.

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	01	00	81	01	00	82	01	00	83
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20

01	00	84	01	00	85	01	00	86	01
B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
00	87	01	00	88	01	00	89	01	00
B31	B32	B33	B34	B35	B36				
8A	01	00	8B	01	00				

4.9 Definition of 5G-NR UICC

4.9.0 Introduction

The 5G-NR test cases require a different configuration than the one described in clause 4.1. For that purpose, a default 5G-NR UICC is defined. In general, the values of the 5G-NR UICC are identical to the default UICC, with the following exceptions:

4.9.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.1 (Default UICC) of the present document apply with the following changes:

Service n°85:	EPS Mobility Management Information	available
Service n°86:	Allowed CSG Lists and corresponding indications	available
Service n°122:	5GS Mobility Management Information	available
Service n°123:	5G Security Parameters	available
Service n°124:	Subscription identifier privacy support	available
Service n°125:	SUCI calculation by the USIM	not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	xxx0 111x			

4.9.2 EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

4.9.3 EF_{5GS3GPPLOC1} (5GS 3GPP location information)

Logically:

5G-GUTI: FF FF FF FF FF FF FF FF FF FF (pre-personalization contents)

TAI: 246 081 000000

5GS update status: 5U2 NOT UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	FF	FF	FF	FF	FF	FF	FF	FF
	B9	B10	B11	B12	B13	B14	B15	B16
	FF	FF	FF	FF	FF	42	16	80
	B17	B18	B19	B20				
	00	00	00	01				

4.9.4 EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile B

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile A

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	A0	06	02	01	01	02	00	00
	B9	B10	B11	B12	B13	B14	B15	B16
	A1	6B	80	01	1B	81	41	04
	B17	B18	B19	B20	B21	B22	B23	B24
	72	DA	71	97	62	34	CE	83
	B25	B26	B27	B28	B29	B30	B31	B32
	3A	69	07	42	58	67	B8	2E
	B33	B34	B35	B36	B37	B38	B39	B40
	07	4D	44	EF	90	7D	FB	4B
	B41	B42	B43	B44	B45	B46	B47	B48
	3E	21	C1	C2	25	6E	BC	D1
	B49	B50	B51	B52	B53	B54	B55	B56
	5A	7D	ED	52	FC	BB	09	7A
	B57	B58	B59	B60	B61	B62	B63	B64
	4E	D2	50	E0	36	C7	B9	C8
	B65	B66	B67	B68	B69	B70	B71	B72
	C7	00	4C	4E	ED	C4	F0	68
	B73	B74	B75	B76	B77	B78	B79	B80
	CD	7B	F8	D3	F9	00	E3	B4
	B81	B82	B83	B84	B85	B86	B87	B88
	80	01	1E	81	20	5A	8D	38
	B89	B90	B91	B92	B93	B94	B95	B96
	86	48	20	19	7C	33	94	B9
	B97	B98	B99	B100	B101	B102	B103	B104
	26	13	B2	0B	91	63	3C	BD
	B105	B106	B107	B108	B109	B110	B111	B112
	89	71	19	27	3B	F8	E4	A6

	B113	B114	B115	B116	B117
	F4	EE	C0	A6	50

4.9.5 EF_{Routing_Indicator} (Routing Indicator EF)

Logically:

Routing Indicator: 17

Coding:	B1	B2	B3	B4
Hex	71	FF	00	00

4.9.6 EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

This file shall be available.

Logically:

ngKSI: '07' (no key available)
 K_{AMF}: 32 byte key, any value
 Uplink NAS count: '00'
 Downlink NAS count: '01'
 Identifiers of selected NAS integrity
 and encryption algorithms: '01'
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: '01'

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Coding:	A0	37	80	01	07	81	20	xx	...	xx
Hex										
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54	B55	B56	B57		
	00	01	84	01	01	85	01	01		

4.9.7 EF_{5GSN3GPPNSC} (5GS non-3GPP Access NAS Security Context)

This file shall be available.

Logically:

ngKSI: '07' (no key available)
 K_{AMF}: 32 byte key, any value
 Uplink NAS count: '00'
 Downlink NAS count: '01'
 Identifiers of selected NAS integrity
 and encryption algorithms: '01'
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: '01'

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Coding:	A0	37	80	01	07	81	20	xx	...	xx
Hex										
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54	B55	B56	B57		
	00	01	84	01	01	85	01	01		

4.9.8 EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Besides of the 8 mandatory PLMNwACT entries 4 optional PLMNwACT entries are defined according to TS 31.102 [4], clause 4.2.5. The Radio Access Technology identifiers are set either to satellite NG-RAN only, NG-RAN only, E-UTRAN only, UTRAN only or GSM only.

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite NG-RAN
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite NG-RAN
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	NG-RAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	04	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	04	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	08	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

4.9.9 EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

The Radio Access Technology identifiers are set either to satellite NG-RAN only, NG-RAN only, E-UTRAN only, UTRAN only.

Logically:

1 st PLMN:	254 001 (MCC MNC)
1 st ACT:	satellite NG-RAN
2 nd PLMN:	254 001
2 nd ACT:	NG-RAN
3 rd PLMN:	254 001
3 rd ACT:	E-UTRAN
4 th PLMN:	254 002
4 th ACT:	satellite NG-RAN

5th PLMN: 254 002
 5th ACT: NG-RAN
 6th PLMN: 254 001
 6th ACT: UTRAN
 7th PLMN: 254 003
 7th ACT: satellite NG-RAN
 8th PLMN: 254 002
 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	04	00	52	14	00	08	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	14	00	40	00	52	24	00	04	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	24	00	08	00	52	14	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	34	00	04	00	52	24	00	80	00

4.9.10 Void

4.10 Definition of 5G-NR UICC – non-IMSI SUPI Type

The 5G-NR non-IMSI SUPI Type test cases require a different configuration than the one described in clause 4.9. For that purpose, a default 5G-NR UICC - non-IMSI SUPI Type is defined. In general, the values of the 5G-NR UICC - non-IMSI SUPI Type are identical to the 5G-NR UICC, with the following exceptions:

USIM AID value shall follow the PIX coding for '3GPP USIM (non-IMSI SUPI Type)' from ETSI TS 101 220 [54] annex E.

4.10.1 EF_{UST} (USIM Service Table)

Settings from clause 4.9 (Default 5G-NR UICC) of the present document apply with the following changes:

Logically:

Service n°130 Support for SUPI of type NSI or GLI or GCI available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx0 111x	xxxx xx1x		

4.10.2 EF_{IMSI} (IMSI)

This file shall not be available.

4.10.3 EF_{SUPI_NAI} (SUPI as Network Access Identifier)

This file shall be available.

Logically: 00-00-5E-00-53-00@5gc.mnc012.mcc345.3gppnetwork.org

SUPI Type: GCI

Username: 00-00-5E-00-53-00

Realm: 5gc.mnc012.mcc345.3gppnetwork.org

Coding:	B1	B2	B3	B4	B5	B6	B7	B8

Hex	82	33	30	30	2D	30	30	2D
	B9	B10	B11	B12	B13	B14	B15	B16
	35	45	2D	30	30	2D	35	33
	B17	B18	B19	B20	B21	B22	B23	B24
	2D	30	30	40	35	67	63	2E
	B25	B26	B27	B28	B29	B30	B31	B32
	6D	6E	63	30	31	32	2E	6D
	B33	B34	B35	B36	B37	B38	B39	B40
	63	63	33	34	35	2E	33	67
	B41	B42	B43	B44	B45	B46	B47	B48
	70	70	6E	65	74	77	6F	72
	B49	B50	B51	B52	B53			
	6B	2E	6F	72	67			

4.10.4 EF_{5GS3GPPLOC} (5GS 3GPP location information)

Settings from clause 4.9.3 of the present document apply.

4.10.5 EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile B

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile A

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	A0	06	02	01	01	02	00	00
	B9	B10	B11	B12	B13	B14	B15	B16
	A1	6B	80	01	1B	81	41	04
	B17	B18	B19	B20	B21	B22	B23	B24
	72	DA	71	97	62	34	CE	83
	B25	B26	B27	B28	B29	B30	B31	B32
	3A	69	07	42	58	67	B8	2E

	B33	B34	B35	B36	B37	B38	B39	B40
	07	4D	44	EF	90	7D	FB	4B
	B41	B42	B43	B44	B45	B46	B47	B48
	3E	21	C1	C2	25	6E	BC	D1
	B49	B50	B51	B52	B53	B54	B55	B56
	5A	7D	ED	52	FC	BB	09	7A
	B57	B58	B59	B60	B61	B62	B63	B64
	4E	D2	50	E0	36	C7	B9	C8
	B65	B66	B67	B68	B69	B70	B71	B72
	C7	00	4C	4E	ED	C4	F0	68
	B73	B74	B75	B76	B77	B78	B79	B80
	CD	7B	F8	D3	F9	00	E3	B4
	B81	B82	B83	B84	B85	B86	B87	B88
	80	01	1E	81	20	5A	8D	38
	B89	B90	B91	B92	B93	B94	B95	B96
	86	48	20	19	7C	33	94	B9
	B97	B98	B99	B100	B101	B102	B103	B104
	26	13	B2	0B	91	63	3C	BD
	B105	B106	B107	B108	B109	B110	B111	B112
	89	71	19	27	3B	F8	E4	A6
	B113	B114	B115	B116	B117			
	F4	EE	C0	A6	50			

4.10.6 EF_{Routing_Indicator} (Routing Indicator EF)

Settings from clause 4.9.5 of the present document apply.

4.10.7 EF_{AD} (Administrative Data)

Logically:
Mode of operation: normal operation
Additional information: ciphering indicator feature disabled
Length of MNC in the IMSI: 0

Coding: B1 B2 B3 B4
Hex 00 00 00 00

4.11 5G-NR UICC – support of Rel-16 features

4.11.1 Introduction

The 5G-NR test cases supporting Rel-16 features require to extend the 5G-NR UICC described in clause 4.9. In general, the values of the 5G-NR UICC apply with the following exceptions:

4.11.2 EF_{UST} (USIM Service Table)

EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.9.1 (5G-NR UICC) of the present document apply with the following changes:

Service n°133	5G Security Parameters extended	available
Service n°136	Support for multiple records of NAS security context storage for multiple registration	available

Coding:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8

Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	xxx0 111x	1xx1 xxxx		

4.11.3 EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

This file shall be available and shall contain two records (see 3GPP TS 31.102 [4]).

Logically:

First record

ngKSI: '07' (no key available)
 K_{AMF}: 32 byte key, any value
 Uplink NAS count: '00'
 Downlink NAS count: '01'
 Identifiers of selected NAS integrity
 and encryption algorithms: '01'
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: '01'

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Hex	A0	37	80	01	07	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54	B55	B56	B57		
	00	01	84	01	01	85	01	01		

Second record

ngKSI: '07' (no key available)
 K_{AMF}: 32 byte key, any value
 Uplink NAS count: '00'
 Downlink NAS count: '01'
 Identifiers of selected NAS integrity
 and encryption algorithms: '01'
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: '01'
 PLMN identifier: '000000'

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Hex	A0	37	80	01	07	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59
	00	01	84	01	01	85	01	01	86	03
	B60	B61	B62							
	00	00	00							

4.11.4 EF_{5GSN3GPPNSC} (5GS non-3GPP Access NAS Security Context)

This file shall be available and shall contain two records (see 3GPP TS 31.102 [4]).

Logically:

First record

ngKSI: '07' (no key available)
 K_{AMF}: 32 byte key, any value
 Uplink NAS count: '00'

Downlink NAS count: '01'
 Identifiers of selected NAS integrity
 and encryption algorithms: '01'
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: '01'

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Hex	A0	37	80	01	07	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54	B55	B56	B57		
	00	01	84	01	01	85	01	01		

Second record

ngKSI: '07' (no key available)
 K_{AMF} : 32 byte key, any value
 Uplink NAS count: '00'
 Downlink NAS count: '01'
 Identifiers of selected NAS integrity
 and encryption algorithms: '01'
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: '01'
 PLMN identifier: '000000'

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Hex	A0	42	80	01	07	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59
	00	01	84	01	01	85	01	01	86	03
	B60	B61	B62							
	00	00	00							

4.11.5 EF_{5GAUTHKEYS} (5G Authentication Keys)

Logically:

K_{AUSF} : 32 bytes, invalid
 K_{SEAF} for 3GPP access: 32 bytes, invalid
 K_{SEAF} for non-3GPP access: 32 bytes, invalid
 SOR counter: 2 bytes, invalid
 UE parameter update counter: 2 bytes, invalid

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	FF	FF	81	20	FF	FF
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	FF	FF	83	02	FF	FF
	B107	B108	B109	B110				
	84	02	FF	FF				

4.12 Definition of CAG 5G-NR UICC

The 5G-NR CAG test cases require a different configuration than the one described in clause 4.9. For that purpose, a default CAG 5G-NR UICC is defined. In general, the values of the CAG 5G-NR UICC are identical to the default 5G-NR UICC, with the following exceptions:

4.12.1 EF_{UST} (USIM Service Table)

Logically:

Service n°137: Preconfigured CAG information list available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	xxx0 111x	xxxx xxxx	xxxx xxx1	0000 00xx

4.12.2 EF_{CAG} (Pre-configured CAG information list)

EF_{CAG} (Pre-configured CAG information list EF)

Logically:

PLMN: 244 083 (MCC MNC)

CAG only: 1

Range indication: 1

CAG-ID range: 00 00 00 01 – 00 00 00 07

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Hex	00	0D	0C	42	34	80	03	00	00	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	01	00	00	00	07					

4.13 Definition of 5G-NR ISIM-UICC

4.13.1 Applications on the 5G-NR ISIM-UICC

The 5G-NR ISIM-UICC shall contain a USIM as defined in clause 4.9 and an ISIM as defined in clause 4.5.3.

4.13.2 Default ISIM values on 5G-NR ISIM-UICC

The 5G-NR ISIM-UICC shall contain an ISIM for IMS access with the values as defined in clause 4.5.3.

4.14 Default WLAN AP and UE configuration for non-3GPP access

4.14.1 Default NG-SS WLAN AP configuration

Default parameters for the NG-SS WLAN AP Cell A_w below are defined for the test cases with non-3GPP access and NAS signaling over N3IWF is required.

WLAN AP cell frequency and other parameters are as defined in clause 4.4.1.3 of 3GPP 38.508-1[40], and clauses 4.4.2 and 4.4.8 of 36.508 [29].

4.14.1.1 WLAN AP frequency

Test frequency	RAT	Operating band	Range	Simulated cells
f20	WLAN	Operating band for WLAN AP's	Mid	WLAN AP Cell A _w

4.14.1.2 WLAN AP default parameters

Parameter	Value	Condition
SSID	3GPP WLAN InterWorking	
Security	[WPA2]	
Hot Spot 2.0 Support	Yes	
Trusted/Un-Trusted non 3GPP Access	Un-Trusted	
EAP-AKA Procedure	CHAP	

4.14.2 Default WLAN configuration for the UE

4.14.2.1 N3IWF Identifier configuration

It contains the FQDN of the N3IWF in the HPLMN as defined in clause 28.3.2.2 of TS 23.003[14] and shall be same as the FQDN of the N3IWF within NG-SS.

4.14.2.2 Non-3GPP access node selection information

It contains, i) PLMN of WLAN Cell A_w as the highest priority PLMN, ii) the 'Preference' parameter indicates N3IWF is preferred in this PLMN.

4.15 Definition of 5G-NR UICC supporting Rel-17 features

4.15.0 Introduction

The 5G-NR UICC supporting Rel-17 features test cases require a different configuration than the one described in clause 4.9. For that purpose, a default 5G-NR UICC supporting Rel-17 features is defined. In general, the values of the 5G-NR UICC supporting Rel-17 features are identical to the 5G-NR UICC, with the following exceptions:

4.15.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.9 (5G-NR UICC) of the present document apply with the following changes:

Service n°129:	5GS Operator PLMN List	not available
Service n°130:	Support for SUPI of type NSI or GLI or GCI	not available
Service n°131:	3GPP PS Data Off separate Home and Roaming lists	not available
Service n°132:	Support for URSP by USIM	not available
Service n°133:	5G Security Parameters extended	not available
Service n°134:	MuD and MiD configuration data	not available
Service n°135:	Support for Trusted non-3GPP access networks by USIM	not available
Service n°136:	Support for multiple records of NAS security context storage for multiple registration	not available
Service n°137:	Pre-configured CAG information list	not available
Service n°138:	SOR-CMCI storage in USIM	not available
Service n°139:	5G ProSe	not available
Service n°140:	Storage of disaster roaming information in USIM	not available
Service n°141:	Pre-configured eDRX parameters	not available
Service n°142:	5G NSWO support	not available
Service n°143:	PWS configuration for SNPN in USIM	not available
Service n°144:	Multiplier Coefficient for Higher Priority PLMN search via NG-RAN satellite access	not available

Service n°145: KAUSF derivation configuration

not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	xxx0 111x	0000 0000	0000 0000	0000 0000

4.15.2 EF_{MCHPPLMN} (Multiplier Coefficient for Higher Priority PLMN search)

Logically:

Multiplier coefficient: 00

Coding:

Byte	B1
Hex	00

4.15.3 EF_{HPLMNwACT} (HPLMN selector with Access Technology)

Logically:

PLMN: MCC 244 and MNC 081

PLMN Access Technology Identifier: NG-RAN

Coding:

Byte	B1	B2	B3	B4	B5
Hex	42	14	00	08	00

4.15.4 EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value:

NMO I Behaviour value:

Attach with IMSI value:

Minimum Periodic Search Timer value:

Extended access barring value:

Timer T3245 Behaviour value:

Override NAS signalling low priority:

Override Extended access barring:

Fast First Higher Priority PLMN Search:

EUTRA Disabling Allowed For EMM Cause15:

SM_RetryWaitTime:

SM_RetryAtRATChange:

Exception Data Reporting Allowed:

No E-UTRA Disabling In 5GS:

Reserved (NAS signalling low priority is not used)

"NMO I, Network Mode of Operation I" indication is not used

normal behaviour is applied

00

extended access barring is not applied for the UE

T3245 not used

Indicates that the UE cannot override the NAS signalling low priority indicator

Indicates that the UE cannot override extended access barring

Indicates that the Fast First Higher Priority PLMN Search is not enabled

disabled

00

UE is allowed to retry the corresponding ESM procedure in S1 mode if an SM procedure was rejected in A/Gb or Iu mode, and to retry the corresponding SM procedure in A/Gb or Iu mode if an ESM procedure was rejected in S1 mode.

Indicates whether the UE in NB-S1 mode is allowed to use the RRC establishment cause mo-ExceptionData.

Indicates whether E-UTRA Disabling In 5GS is disabled or enabled. The default value is 0.

Byte:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Coding:	80	01	00	81	01	00	82	01	00	83
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	01	00	84	01	00	85	01	00	86	01
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	00	87	01	00	88	01	00	89	01	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	8A	01	00	8B	01	00	8D	01	00	90
	B41	B42								
	01	00								

4.15.5 EF_{SOR-CMCI} (Steering Of Roaming - Connected Mode Control Information)

Logically:

SOR-CMCI rule 1:

Tsor-cm timer value:	'00100101' (5 minutes)
Criterion type:	match all
Criterion value:	empty (zero octet length)

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	04	03	25	FF	00	FF	FF
	B9	B10	B11	B12	B13	B14	B15	B16
	FF	FF	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20	B21	B22	B23	B24
	FF	FF	FF	FF	FF	FF	FF	FF
	B25	B26	B27	B28				
	FF	FF	FF	FF				

4.15.6 EF_{5GNSWO_CONF} (5G Non-Seamless WLAN Offload configuration)

Logically:

5G Non-Seamless WLAN Offload usage Indicator:	5G Non-Seamless WLAN Offload usage Indicator is disabled

Coding:

Byte	B1
Hex	00

4.16 Definition of 5G-NR SSIM-UICC

4.16.0 Introduction

The 5G-NR NSSAA procedure involving SSIM test cases require a different configuration than the one described in clause 4.9. For that purpose, a default 5G-NR UICC supporting SSIM features is defined. In general, the values of the 5G-NR UICC supporting SSIM features are identical to the 5G-NR UICC, with the following exceptions:

4.16.1 Applications on the 5G-NR SSIM-UICC

The 5G-NR SSIM-UICC shall contain, both properly declared in EF_{DIR}:

- a USIM as defined in clause 4.9.

- an SSIM, with SSIM AID value that shall follow the PIX coding for '3GPP SSIM' from ETSI TS 101 220 [54] annex E.

4.16.2 Default SSIM values on 5G-NR SSIM-UICC

An SSIM containing the following default values is used for all tests of this present document unless otherwise stated.

For each data item, the logical default values and the coding within the elementary files (EF) of the SSIM follow.

NOTE 1: Bx represents byte x of the coding.

NOTE 2: Unless otherwise defined, the coding values are hexadecimal.

4.16.2.1 EF_{EAPID} (EAP Identifier)

Logically:

EAP Identifier: verylongusername1@3gpp.com

Username: verylongusername1

Realm: 3gpp.com

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	1A	76	65	72	79	6C	6F
	B9	B10	B11	B12	B13	B14	B15	B16
	6E	67	75	73	65	72	6E	61
	B17	B18	B19	B20	B21	B22	B23	B24
	6D	65	31	40	33	67	70	70
	B25	B26	B27	B28	B29	B30	B31	B32
	2E	63	6F	6D				

4.16.2.2 EF_{EAPSTATUS} (EAP Authentication Status)

Logically:

Record 1:

S-NSSAI: empty

Authentication status: empty

Coding:

Byte	B1	B2	B3	B4	B5
Hex	FF	FF	FF	FF	FF

Record 2:

S-NSSAI: empty

Authentication status: empty

Coding:

Byte	B1	B2	B3	B4	B5
Hex	FF	FF	FF	FF	FF

4.16.2.2 EF_{NSSAI} (S-NSSAI List)

Logically:

Record 1: S-NSSAI: 01 01 01 03 (SST: eMBB, SD: 010103)

Coding:

Byte	B1	B2	B3	B4
Hex	01	01	01	03

Record 2: S-NSSAI: 01 01 01 02 (SST: eMBB, SD: 010102)

Coding:

Byte	B1	B2	B3	B4
Hex	01	01	01	02

4.17 Definition of 5G-NR UICC supporting Rel-18 features

4.17.0 Introduction

The 5G-NR UICC supporting Rel-18 features test cases require a different configuration than the one described in clause 4.9. For that purpose, a default 5G-NR UICC supporting Rel-18 features is defined. In general, the values of the 5G-NR UICC supporting Rel-18 features are identical to the 5G-NR UICC supporting Rel-17 features (clause 4.15), with the following exceptions:

4.17.1 EF_{UST} (USIM Service Table)

Logically:

Settings from clause 4.15 (5G-NR UICC supporting Rel-17 features) of the present document apply with the following changes:

Service n°147:	5MBS UE pre-configuration	not available
Service n°148:	UE configured for using "Operator controlled signal threshold per access technology"	available
Service n°149:	A2X	not available
Service n°150:	IMS Data Channel Indication	not available

Coding:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	xxx0 111x	0000 0000	0000 0000	0000 1000

4.17.2 EF_{OCST} ("Operator controlled signal threshold per access technology")

Logically: Operator has not configured UE to use SENSE

Coding:

Byte	B1
Hex	00

5 Subscription related tests

5.1 IMSI / TMSI handling

5.1.1 UE identification by short IMSI

5.1.1.1 Definition and applicability

The IMSI is used for unique identification of the UE by UTRAN/ a GERAN. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

5.1.1.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE/ ATTACH REQUEST containing the IMSI of the USIM, which is less than the maximum length.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.008 [16], clause 10.5.1.4 and 4.7.9.1.2;
- ETSI TS 102 221 [5], clause 14.1.1.

5.1.1.3 Test purpose

- 1) To verify that the Terminal uses the IMSI of the USIM.
- 2) To verify that the Terminal can handle an IMSI of less than the maximum length.
- 3) To verify that the READ EF_{IMSI} command is performed correctly by the terminal

5.1.1.4 Method of test

5.1.1.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- RAI (MCC/MNC/LAC/RAC): 246/081/0001/05. (only for UTRAN cell)
- Access control: unrestricted.

The default UICC is installed into the Terminal and the UE is powered on. In case PS is supported and active the ME performs a GPRS attach procedure, this will be accepted by the USS.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

5.1.1.4.2 Procedure

Expected Sequence A:

- a) The USS sends PAGING TYPE 1 in the CS domain if supported by the ME or where CS is not supported by the ME, in PS domain to the UE using the IMSI stored in the USIM.
- b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- c) After receipt of a PAGING RESPONSE in case paging in CS domain or an ATTACH REQUEST in case of PS domain from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

- a) The SS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

5.1.1.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE or ATTACH REQUEST to the USS/SS containing the IMSI stored in the USIM.

5.1.2 UE identification by short IMSI using a 2 digit MNC

5.1.2.1 Definition and applicability

In some networks the IMSI identifying the UTRAN/ GERAN can be consistence of a 2 digit MNC. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

5.1.2.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE/ ATTACH REQUEST containing the IMSI of the USIM.

Reference:

- TS 31.102 [4], clause 4.2.18;
- TS 24.008 [16], clause 10.5.1.4 and 4.7.9.1.2.

5.1.2.3 Test purpose

- 1) To verify that the Terminal can handle an IMSI consistence of a 2 digit MNC.

5.1.2.4 Method of test

5.1.2.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/81/0001.
- RAI (MCC/MNC/LAC/RAC): 246/81/0001/05. (only for UTRAN cell)
- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{LOC}I (Location Information)

Logically: LAI-MCC: 246
 LAI-MNC: 81
 LAI-LAC: 0001
 TMSI: "FF .. FF"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	FF	FF	FF	FF	42	F6	18	00	01	FF	00

EF_{IMSI} (IMSI)

Logically: 246813579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	05	29	64	18	53	97	FF	FF	FF

Logically:
 Mode of operation: normal operation
 Additional information: ciphering indicator feature disabled
 Length of MNC in the IMSI: 2 digit

Coding:	B1	B2	B3	B4
Hex	00	00	00	02

The UICC is installed into the Terminal and the UE is powered on. In case PS is supported and active the ME performs a GPRS attach procedure, this will be accepted by the USS.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

5.1.2.4.2 Procedure

Expected Sequence A:

- The USS sends PAGING TYPE 1 in the CS domain if supported by the ME or where CS is not supported by the ME, in PS domain to the UE using the IMSI stored in the USIM.
- After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- After receipt of a PAGING RESPONSE in the case of paging in CS domain or an ATTACH REQUEST in the case of PS domain from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

- The SS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.
- After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

5.1.2.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE or ATTACH REQUEST to the USS/SS containing the IMSI stored in the USIM.

5.1.3 UE identification by "short" TMSI

5.1.3.1 Definition and applicability

The TMSI is temporarily used for identification of the UE by UTRAN/ a GERAN. It will have been previously assigned by the network. The TMSI is stored in the USIM by the Terminal and read during the USIM-Terminal initialisation procedure.

NOTE: According to TS 23.003 [14], clause 2.4, a TMSI always consists of 8 digits (4 bytes). With this tests the handling of a TMSI with leading zeros will be tested. The term "short" TMSI is used in order to distinguish between the tests as defined in clauses 5.1.3 and 5.1.4.

5.1.3.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE containing the TMSI of the USIM. According to clause 10.3.1.17 in TS 25.331 [20] the TMSI has a fixed length of 32 bit (8 digits) when used inside the PAGING TYPE 1/ PAGING REQUEST message.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.008 [16], clause 10.5.1.4.
- TS 25.331 [20], clause 10.3.1.17

5.1.3.3 Test purpose

- 1) To verify that the Terminal uses the TMSI stored in the USIM.
- 2) To verify that the Terminal can handle a TMSI of less than maximum length.

5.1.3.4 Method of test

5.1.3.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{LOC}I (Location Information)

Logically: LAI-MCC: 246
 LAI-MNC: 081
 LAI-LAC: 0001
 TMSI: "00002143"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	00	00	21	43	42	16	80	00	01	FF	00

The UICC is installed into the Terminal and the UE is powered on.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

5.1.3.4.2 Procedure

Expected Sequence A:

- a) The USS sends PAGING TYPE 1 to the UE using the TMSI stored in the USIM matching the required length of 8 digits.
- b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- c) After receipt of a PAGING RESPONSE from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

- a) The SS sends PAGING REQUEST to the UE using the TMSI stored in the USIM matching the required length of 8 digits.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

5.1.3.5 Acceptance criteria

After step b) the UE shall send PAGING RESPONSE to the USS/SS containing the TMSI stored in the USIM.

5.1.4 UE identification by "long" TMSI

5.1.4.1 Definition and applicability

The TMSI is temporarily used for identification of the UE by UTRAN/ a GERAN. It will have been previously assigned by the network. The TMSI is stored in the USIM by the Terminal and read during the USIM-Terminal initialisation procedure.

NOTE: According to TS 23.003 [14], clause 2.4, a TMSI always consists of 8 digits (4 bytes). With this tests the handling of a new assigned TMSI will be tested. The term "long" TMSI is used in order to distinguish between the tests as defined in clauses 5.1.3 and 5.1.4.

5.1.4.2 Conformance requirement

After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE containing the correct TMSI stored in the USIM.

According to clause 10.3.1.17 in TS 25.331 [20] the TMSI has a fixed length of 32 bit (8 digits) when used inside the PAGING TYPE 1/PAGING REQUEST message.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.008 [16], clause 10.5.1.4.
- TS 25.331 [20], clause 10.3.1.17

5.1.4.3 Test purpose

- 1) To verify that the Terminal uses the TMSI stored in the USIM.
- 2) To verify that the Terminal can handle a TMSI of maximum length.

- 3) To verify that the Terminal does not respond to page requests containing a previous TMSI.

5.1.4.4 Method of test

5.1.4.4.1 Initial conditions

Prior to this test, the Terminal shall have been operated with a USIM containing TMSI "2143". This may be achieved by executing the previous test (5.1.3) prior to this test. Only under this condition will test purpose 3) be verified.

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{LOC} (Location Information)

Logically: LAI-MCC: 246
 LAI-MNC: 081
 LAI-LAC: 0001
 TMSI: "21430000"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	21	43	00	00	42	16	80	00	01	FF	00

The UICC is installed into the Terminal and the UE is powered on.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

5.1.4.4.2 Procedure

Expected Sequence A:

- a) The USS sends PAGING TYPE 1 to the UE using the TMSI "00002143".
- b) The USS sends PAGING TYPE 1 to the UE using the TMSI stored in the USIM.
- c) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- d) After receipt of a PAGING RESPONSE from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

Expected Sequence B:

- a) The SS sends PAGING REQUEST to the UE using the TMSI "00002143".
- b) The SS sends PAGING REQUEST to the UE using the TMSI stored in the USIM.
- c) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- d) After receipt of a PAGING RESPONSE from the UE, the SS sends CHANNEL RELEASE to the UE.

5.1.4.5 Acceptance criteria

- 1) After step a) the UE shall not respond to the PAGING TYPE 1 respectively to the PAGING REQUEST.
- 2) After step c) the UE shall send PAGING RESPONSE to the USS/ SS containing the TMSI stored in the USIM.

5.1.5 UE identification by long IMSI, TMSI updating and key set identifier assignment

5.1.5.1 Definition and applicability

The IMSI and TMSI are used for identification of the UE by UTRAN/ a GERAN. They are read from the USIM during the USIM-Terminal initialisation procedure. Within the authentication procedure the UTRAN sends a key set identifier respectively a GERAN sends a ciphering key sequence number to the UE. In addition the network may allocate a new TMSI to the UE. Key set identifier and TMSI are stored in the USIM after UTRAN call termination and/or at a 3G session termination. Ciphering key sequence number and TMSI are stored in the USIM after GERAN call termination and/or at a 3G session termination.

NOTE: According to TS 24.008 [16] the term KSI may be used instead of the term ciphering key sequence number which is used inside the MM message AUTHENTICATION REQUEST.

5.1.5.2 Conformance requirement

- 1) After successful completion of the RRC Connection Establishment procedure (in case of Terminals accessing UTRAN) respectively after receipt of an IMMEDIATE ASSIGNMENT message (in case of a Terminal accessing a GERAN) the UE shall send PAGING RESPONSE containing the correct IMSI stored in the USIM.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.008 [16], clause 10.5.1.4.

- 2) After call termination the USIM shall contain the key set identifier (ciphering key sequence number) and TMSI received by the UE during the authentication and TMSI reallocation procedures.

Reference:

- TS 31.102 [4], clauses 5.1.2, 5.2.5 and 5.2.6;
- TS 21.111 [19], clause 10.1.
- TS 24.008 [16], clause 4.3.2.4.

- 3) After call termination the Terminal shall have updated EFLOCI.

Reference:

- ETSI TS 102 221 [5], clause 14.1.2.

5.1.5.3 Test purpose

- 1) To verify that the Terminal uses the IMSI stored in the USIM.
- 2) To verify that the Terminal does not respond to page requests containing a previous IMSI.
- 3) To verify that the Terminal can handle an IMSI of maximum length.
- 4) To verify that the Terminal correctly updates the key set identifier respectively the ciphering key sequence number at call termination.
- 5) To verify that the Terminal correctly updates the TMSI at call termination.
- 6) To verify that the UPDATE EF_{LOCI} command is performed correctly by the terminal

5.1.5.4 Method of test

5.1.5.4.1 Initial conditions

Prior to this test, the Terminal shall have been operated with a USIM containing IMSI "2460813579". This may be achieved by executing the previous test (5.1.4) prior to this test. Only under this condition will test purpose 2) be verified.

The USS (in case of a Terminal accessing UTRAN) / SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 246081111111111

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	11	11	11	11	11

EF_{Kc} (GSM Ciphering Key Kc)

Logically: Ciphering key Kc: xx
Ciphering key sequence number n: 01

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	xx	xx	xx	xx	xx	xx	xx	xx	01

The UICC is installed into the Terminal and the UE is powered on.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

5.1.5.4.2 Procedure

Expected Sequence A:

- a) The USS sends PAGING TYPE 1 to the UE using the IMSI "2460813579".
- b) The USS sends PAGING TYPE 1 to the UE using the IMSI stored in the USIM.
- c) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- d) After receipt of a PAGING RESPONSE from the UE, the USS sends AUTHENTICATION REQUEST to the UE containing Key Set Identifier KSI (ciphering key sequence number) set to binary 010.
- e) After receipt of AUTHENTICATION RESPONSE from the UE and subsequent completion of the security procedure on RRC, the USS sends TMSI REALLOCATION COMMAND to the UE containing TMSI "32547698".
- f) Within 5 s after receipt of TMSI REALLOCATION COMPLETE from the UE, the USS sends RRC CONNECTION RELEASE to the UE.
- g) To allow examination of the values in the USIM after connection termination the UE shall not be soft powered down. If the test is performed with a USIM simulator, the simulation is stopped. If the test is performed with a USIM, the UICC is removed without soft powering down the UE. If this is not possible, the power supply of the Terminal is removed and then the UICC removed.

Expected sequence B:

- a) The SS sends PAGING REQUEST to the UE using the IMSI "2460813579".
- b) The SS sends PAGING REQUEST to the UE using the IMSI stored in the USIM.
- c) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- d) After receipt of a PAGING RESPONSE from the UE, the SS sends AUTHENTICATION REQUEST to the UE containing ciphering key sequence number set to binary 010.
- e) After receipt of AUTHENTICATION RESPONSE from the UE, the SS sends TMSI REALLOCATION COMMAND to the UE containing TMSI "32547698".
- f) Within 5 s after receipt of TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- g) To allow examination of the values in the USIM after connection termination the UE shall not be soft powered down. If the test is performed with a USIM simulator, the simulation is stopped. If the test is performed with a USIM, the UICC is removed without soft powering down the UE. If this is not possible, the power supply of the Terminal is removed and then the UICC removed.

5.1.5.5 Acceptance criteria

- 1) After step a) the UE shall not respond to the PAGING TYPE 1/ PAGING REQUEST.
- 2) After step c) the UE shall send PAGING RESPONSE to the USS/SS containing the IMSI stored in the USIM.
- 3) After step e) the UE shall send TMSI REALLOCATION COMPLETE to the USS/SS.
- 4) After step g) the USIM shall contain the following values:

EF_{LocI} (Location Information)

Logically: LAI-MCC: 246
 LAI-MNC: 081
 TMSI: "32547698"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	32	54	76	98	42	16	80	xx	xx	xx	00

In case of a Terminal accessing UTRAN:

EF_{Keys} (Ciphering and Integrity Keys)

Logically: Key Set Identifier KSI: 02
 Ciphering Keys CK: xx (result of the authentication algorithm)
 Integrity Keys IK: xx (result of the authentication algorithm)

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	02	xx	xx	...	xx	xx	xx	...	xx	xx	xx

In case of a Terminal accessing a GERAN:

EF_{Kc} (GSM Ciphering Key Kc)

Logically: Ciphering key Kc: xx (result of the authentication algorithm)
 Ciphering key sequence number n: 02

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	xx	xx	xx	xx	Xx	xx	xx	xx	02

5.1.6 UE identification by short IMSI when accessing E-UTRAN/EPC

5.1.6.1 Definition and applicability

Paging for EPS services using IMSI is an abnormal procedure used for error recovery in the network. The IMSI is used for unique identification of the UE by an E-UTRAN/EPC if there is no GUTI available. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

5.1.6.2 Conformance requirement

Only after reception of a Paging message containing the IMSI stored in the USIM the UE shall send the *RRCConnectionRequest* message.

For NB-IoT, the paging message shall include a CN domain indicator set to "PS". If the paging message includes a UE Paging Identity set to the UE's IMSI, the paging procedure is performed according to clause 5.6.2.2.2 [26].

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- ETSI TS 102 221 [5], clause 14.1.1;
- TS 24.301 [26], clause 5.6.2.2.2, 5.6.2.4.

5.1.6.3 Test purpose

- 1) To verify that the Terminal uses the IMSI of the USIM.
- 2) To verify that the Terminal can handle an IMSI of less than the maximum length.
- 3) To verify that the READ EF_{IMSI} command is performed correctly by the terminal.
- 4) To verify that the terminal does not respond to a Paging message containing an IMSI not stored in the USIM.

5.1.6.4 Method of test

5.1.6.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is installed into the Terminal and the UE is powered on.

5.1.6.4.2 Procedure

- a) The UE performs Attach procedure to E-USS/NB-SS.
- b) The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the IMSI 24608122222.
- c) The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the IMSI stored in the USIM.

- d) After receipt of a *RRCCConnectionRequest/RRCCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* message to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- e) After the EPS attach procedure the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB* to the UE.

5.1.6.5 Acceptance criteria

- 1) After step b) the UE shall not send *RRCCConnectionRequest/RRCCConnectionRequest-NB* to the E-USS/NB-SS.
- 2) After step c) the UE shall send *RRCCConnectionRequest/RRCCConnectionRequest-NB* to the E-USS/NB-SS.
- 3) After step d) the UE performs the EPS attach procedure.

5.1.7 UE identification by short IMSI using a 2 digit MNC when accessing E-UTRAN/EPC

5.1.7.1 Definition and applicability

In some networks the IMSI identifying the E-UTRAN/EPC can be consistence of a 2 digit MNC. Paging for EPS services using IMSI is an abnormal procedure used for error recovery in the network. The IMSI is used for unique identification of the UE by an E-UTRAN/EPC if there is no GUTI available. The IMSI is stored in the USIM and read during the UICC-Terminal initialisation procedure.

5.1.7.2 Conformance requirement

Only after reception of a Paging message containing the IMSI stored in the USIM the UE shall send the *RRCCConnectionRequest* message.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- ETSI TS 102 221 [5], clause 14.1.1;
- TS 24.301 [26], clause 5.6.2.2.2, 5.6.2.4.

5.1.7.3 Test purpose

- 1) To verify that the Terminal uses the IMSI of the USIM.
- 2) To verify that the Terminal can handle an IMSI consistence of a 2 digit MNC.
- 3) To verify that the READ EF_{IMSI} command is performed correctly by the terminal.
- 4) To verify that the terminal does not respond to a Paging message containing an IMSI not stored in the USIM.

5.1.7.4 Method of test

5.1.7.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/81/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/81/0001.

- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 246813579

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	05	29	64	18	53	97	FF	FF	FF

EF_{AD} (Administrative Data)

Logically:

Mode of operation:	normal operation
Additional information:	ciphering indicator feature disabled
Length of MNC in the IMSI:	2 digit

Coding:	B1	B2	B3	B4
Hex	00	00	00	02

The UICC is installed into the Terminal and the UE is powered on.

5.1.7.4.2 Procedure

- The UE performs Attach procedure to E-USS/NB-SS.
- The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the IMSI 2460812222.
- The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the IMSI stored in the USIM.
- After receipt of a *RRCCConnectionRequest/RRCCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* message to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- After the EPS attach procedure the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB* to the UE.

5.1.7.5 Acceptance criteria

- After step b) the UE shall not send *RRCCConnectionRequest/RRCCConnectionRequest-NB* to the E-USS/NB-SS.
- After step c) the UE shall send *RRCCConnectionRequest/RRCCConnectionRequest-NB* to the E-USS/NB-SS.
- After step d) the UE performs the EPS attach procedure.

5.1.8 UE identification after changed IMSI with service "EMM Information" not available

5.1.8.1 Definition and applicability

The attach procedure is used to attach for packet services in EPS. With a successful attach procedure, a context is established for the UE in the MME, and a default bearer is established between the UE and the PDN GW, thus enabling always-on IP connectivity to the UE. The network may also initiate the activation of dedicated bearers as part of the attach procedure. For NB-IoT terminals the establishment of the PDN connection is optional.

5.1.8.2 Conformance requirement

The following EMM parameters shall be stored on the USIM if the corresponding file is present:

- GUTI;
- last visited registered TAI;
- EPS update status.

If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM. These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.301 [26], clause 5.5.1.2.1, 5.5.1.2.2, 5.5.1.2.4 and Annex C.

5.1.8.3 Test purpose

- 1) To verify that UE deletes existing EMM parameters from the UE's non-volatile memory in case a different IMSI is activated.
- 2) To verify that UE includes the IMSI stored in the USIM during the attach procedure.

5.1.8.4 Method of test

5.1.8.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default UICC (without the service "EMM Information") is installed into the Terminal and the UE is powered on.

5.1.8.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS. The E-USS/NB-SS sends *AttachAccept* with the following values:

GUTI: "24608100010266345678"

TAI (MCC/MNC/TAC):246/081/0001
- c) The UE send *AttachComplete*.
- d) The E-USS/NB-SS requests the release of the RRC Connection.
- e) The UE is switched off.
- f) A new UICC with the following configuration is activated:

The default UICC with the following exception: The IMSI is set to "24608122233333".

g) The Terminal is switched on.

h) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS.

5.1.8.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST}.
- 2) During step h) the UE shall include the IMSI "24608122233333", but no GUTI nor TAI in the AttachRequest message.

5.1.9 UE identification by GUTI when using USIM with service "EMM Information" not available

The attach procedure is used to attach for packet services in EPS. With a successful attach procedure, a context is established for the UE in the MME, and a default bearer is established between the UE and the PDN GW, thus enabling always-on IP connectivity to the UE. The network may also initiate the activation of dedicated bearers as part of the attach procedure. For NB-IoT terminals the establishment of the PDN connection is optional.

5.1.9.2 Conformance requirement

The following EMM parameters shall be stored on the USIM if the corresponding file is present:

- GUTI;
- last visited registered TAI;
- EPS update status.

If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM. These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.301 [26], clause 5.5.1.2.1, 5.5.1.2.2, 5.5.1.2.4 and Annex C.

5.1.9.3 Test purpose

- 1) To verify that UE stores the GUTI and the TAI in the UE's non-volatile memory.
- 2) To verify that the UE uses the GUTI and the TAI from the UE's non-volatile memory during the attach procedure if the IMSI stored in the USIM has not changed.

5.1.9.4 Method of test

5.1.9.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.

- Access control: unrestricted.

The default UICC (without the service "EMM Information") is installed into the Terminal and the UE is powered on.

5.1.9.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS. The E-USS/NB-SS sends *AttachAccept* with the following values:

GUTI: "24608100010266345699"

TAI (MCC/MNC/TAC):246/081/0001
- c) The UE send *AttachComplete*.
- d) The E-USS/NB-SS requests the release of the RRC Connection.
- e) The UE is switched off.
- f) The default UICC remains in use.
- g) The Terminal is switched on.
- h) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS.

5.1.9.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST}.
- 2) During step h) the UE shall include the GUTI "24608100010266345699" and the TAI 246/081/0001 in the *AttachRequest* message.

5.1.10 UE identification by GUTI when using USIM with service "EMM Information" available

5.1.10.1 Definition and applicability

The attach procedure is used to attach for packet services in EPS. With a successful attach procedure, a context is established for the UE in the MME, and a default bearer is established between the UE and the PDN GW, thus enabling always-on IP connectivity to the UE. The network may also initiate the activation of dedicated bearers as part of the attach procedure. For NB-IoT terminals the establishment of the PDN connection is optional.

5.1.10.2 Conformance requirement

The following EMM parameters shall be stored on the USIM if the corresponding file is present:

- GUTI;
- last visited registered TAI;
- EPS update status.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

Reference:

- TS 31.102 [4], clauses 5.1.1 and 5.2.2;
- TS 24.301 [26], clause 5.5.1.2.1, 5.5.1.2.2, 5.5.1.2.4 and Annex C.

5.1.10.3 Test purpose

- 1) To verify that UE includes the GUTI and TAI stored in EF_{EPSLOC} in the *AttachRequest* message.
- 2) To verify that the EMM parameters GUTI, Last Registered TAI sent in the *AttachAccept* message and the related EPS Update Status are correctly stored on the USIM if the corresponding file is present.

5.1.10.4 Method of test

5.1.10.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{EPSNSC} (EPS NAS Security Context)

Logically: Key Set Identifier KSI_{ASME} : '01'
 ASME Key (KSI_{ASME}): 32 byte key, any value
 Uplink NAS count: '00'
 Downlink NAS count: '01'
 Identifiers of selected NAS
 integrity and encryption algorithm: '01'

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	...	B39
Hex	A0	34	80	01	01	81	20	xx	...	xx
	B40	B41	B42	B43	B44	B45	B46	B47	B48	B49
	82	04	00	00	00	00	83	04	00	00
	B50	B51	B52	B53	B54					
	00	01	84	01	01					

5.1.10.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and therefore performs EPS Attach procedure to the E-USS/NB-SS. The E-USS/NB-SS sends *AttachAccept* with the following values:
 GUTI: "24608100010266436587"
 TAI (MCC/MNC/TAC):246/081/0002
- c) The UE send *AttachComplete*.
- d) The E-USS/NB-SS requests the release of the RRC Connection.

5.1.10.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} and EF_{EPSLOC} .
- 2) During step b) the UE shall include the GUTI and the Last visited registered TAI contained in EF_{EPSLOC} when sending the *AttachRequest* message.

3) After step b) EF_{EPSLOC} shall contain:

Logically: GUTI: 24608100010266436587
 Last visited registered TAI: 246/081/0002
 EPS update status: updated

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex:	0B	F6	42	16	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	16	80	00	02	00				

5.2 Access Control handling

5.2.1 Access Control information handling

5.2.1.1 Definition and applicability

Access Control allows restriction of call access attempts. All User Equipment are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special Categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

In addition, there is a separate mechanism for control of network access for emergency call attempts.

5.2.1.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

Reference:

- TS 31.102 [4], clause 5.1.1.

2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network, access attempts are allowed . Otherwise access attempts are not allowed.

3. If access class 10 is barred, then the UE of classes 0 – 9 and the Terminals without UICCs shall not make emergency call attempts.

4. UE of classes 11 – 15 are not allowed to make emergency call attempts if access class 10 and the relevant access class(es) between 11 and 15 are barred. Otherwise, emergency call attempts are allowed irrespective of the conditions of access class 10.

All options are shown in figure 5-1 and are referenced to the tests.

Reference:

- TS 22.011 [6], clauses 4.3 and 4.4.

5.2.1.3 Test purpose

- 1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

- Tests (a) and (b) No UICC in Terminal.
- Tests (c) to (e) UE with access class 0 to 9.
- Test (f) UE with access class 11 and 15 not in HPLMN, and
UE with access class 12,13 and 14 not in HPLMN country.
- Test (g) and (h) UE with access class 11 and 15 in HPLMN, and
UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control and emergency call bits signalled by the network, as shown in table 5-1.

5.2.1.4 Method of test

5.2.1.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a GERAN Terminal) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): MCC, MNC: see table 5-1, LAC="0001".
- Access control: see table 5-1.
- RACH: see table 5-1.

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 5-1 and the UE is powered on.

NOTE: Depending on the initial value of the EF_{LOC1}, the UE may perform a location update. This shall be accepted by the USS/SS.

5.2.1.4.2 Coding details

USIM IMSI EF_{IMSI}: Data Field "6F 07"

Logically:	IMSI: "2460813579"								
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	75	F9	FF	FF

Logically:	IMSI: "24608135x9"								
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	x5	F9	FF	FF

Access Control class EF_{ACC}: Data field "6F 78"

Reference:

See TS 31.102 [4].

NETWORK (USS in case of a Terminal accessing UTRAN)

Access Class Barred List in SIB 3 should be set as table 5.1a:

Reference:

TS 25.331 clause 10.3.2.1

NOTE: The first instance of the parameter corresponds to Access Class 0, the second to Access Class 1 and so on up to Access Class 15.

NETWORK (SS in case of a Terminal accessing GERAN)

RACH: As defined in TS 44.018 clause 10.5.2.29.

NOTE: TS 44.018 also apply for the Radio Resource management for UMTS (see TS 24.008, clause 10.5.2).

Octet 1 0111 1000
 Octet 2 0000 1000
 Octet 3 }
 Octet 4 } as table 5-1b

5.2.1.4.3 Procedure

- a) Using the MMI or EMMI a normal call set-up is attempted.
- b) Using the MMI or EMMI an emergency call set-up is attempted.
- c) The test is repeated for each set of values in table 5-1.

5.2.1.5 Acceptance criteria

After steps a) and b) the UE shall access the network, or shall make no access attempt, in accordance with table 5-1.

NOTE 1: For conformance testing, to limit testing, in test(c), (d) and (e) it is only necessary that one of the access classes is tested. This access class may be chosen randomly.

NOTE 2: In tables 5-1a and 5-1b the following notation is used to describe the Access Class Barred IE:
 "0" = not barred, "1" =barred.

Table 5-1a

USIM			Network			Test Results	
IMSI			RACH SIB3: Access Class Barred List	Informative: Cell Barred for:	BCCH/ LAI	Normal Call	Emergency Call
Access Class			AC15- AC08 AC07- AC00	Emergency Call Normal Call	MCC MNC		
Test (a)	No UICC in Terminal	N/A	0000 0100 0000 0000	Yes No	234 001	No	No
Test (b)	No UICC in Terminal	N/A	0000 0000 0000 0000	No No	234 001	No	Yes
Test (c)	"2460813579"	0	0000 0100 0000 0001	Yes No, except for ACC	246 081	No	No

	"2460813579"	1	0000 0100 0000 0010	Yes No, except for ACC	246 081	No	No
	"2460813579"	2	0000 0100 0000 0100	Yes No, except for ACC	246 081	No	No
	"2460813579"	3	0000 0100 0000 1000	Yes No, except for ACC	246 081	No	No
	"2460813579"	4	0000 0100 0001 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	5	0000 0100 0010 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	6	0000 0100 0100 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	7	0000 0100 1000 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	8	0000 0101 0000 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	9	0000 0110 0000 0000	Yes No, except for ACC	246 081	No	No
Test (d)	"2460813579"	0	0000 0000 0000 0001	No None, except for ACC	246 081	No	Yes
	"2460813579"	1	0000 0000 0000 0010	No None, except for ACC	246 081	No	Yes
	"2460813579"	2	0000 0000 0000 0100	No None, except for ACC	246 081	No	Yes
	"2460813579"	3	0000 0000 0000 1000	No None, except for ACC	246 081	No	Yes
	"2460813579"	4	0000 0000 0001 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	5	0000 0000 0010 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	6	0000 0000 0100 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	7	0000 0000 1000 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	8	0000 0001 0000 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	9	0000 0010	No	246	No	Yes

			0000 0000	None, except for ACC	081		
Test (e)	"2460813579"	0	1111 1011 1111 1110	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	1	1111 1011 1111 1101	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	2	1111 1011 1111 1011	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	3	1111 1011 1111 0111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	4	1111 1011 1110 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	5	1111 1011 1101 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	6	1111 1011 1011 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2406813579"	7	1111 1011 0111 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	8	1111 1010 1111 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	9	1111 1001 1111 1111	No All, except ACC on USIM	246 081	Yes	Yes
Test (f)	"24608135x9"	11 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	246 082	No	No
	"	11 & x	0000 0011 1111 1111	No All, except ACC greater than 11	246 082	No	Yes
	"	11 & x	0000 0000 0000 0000	No None	246 082	Yes	Yes
	"24608135x9"	12 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	244 001	No	No
	"	12 & x	0000 0011 1111 1111	No All, except ACC greater than 11	244 001	No	Yes
	"	12 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"24608135x9"	13 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	244 001	No	No

	"	13 & x	0000 0011 1111 1111	No All, except ACC greater than 11	244 001	No	Yes
	"	13 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"24608135x9"	14 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	244 001	No	No
	"	14 & x	0000 0011 1111 1111	No All, except ACC greater than 11	244 001	No	Yes
	"	14 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"24608135x9"	15 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	246 082	No	No
	"	15 & x	0000 0011 1111 1111	No All, except ACC greater than 11	246 082	No	Yes
	" Set "x" to an arbitrary value in the range 0 to 9	15 & x	0000 0000 0000 0000	No None	246 082	Yes	Yes
Test (g)	"2460813579"	11 & x	0000 1111 1111 1111	Yes All normal ACC and ACC on USIM	246 081	No	No
	"	11 & x	0000 1011 1111 1111	No All normal ACC and ACC on USIM	246 081	No	Yes
	"2460813579"	12 & x	0001 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	12 & x	0001 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"2460813579"	13 & x	0010 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	13 & x	0010 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"2460813579"	14 & x	0100 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	14 & x	0100 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"2460813579"	15 & x	1000 0111	Yes	246	No	No

			1111 1111	All normal ACC and ACC on USIM	081		
"	15 & x	1000 0011	No	246	No	Yes	
Set "x" to an arbitrary value in the range 0 to 9		1111 1111	All normal ACC and ACC on USIM	081			
Test (h)	"2460813579"	11 & x	1111 0011	No	246	Yes	Yes
			1111 1111	All, except "special" ACC on USIM	081		
"	11 & x	1111 0111	Yes	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	081			
"2460813579"	12 & x	1110 1011	No	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	082			
"	12 & x	1110 1111	Yes	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	082			
"2460813579"	13 & x	1101 1011	No	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	082			
"	13 & x	1101 1111	Yes	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	082			
"2460813579"	14 & x	1011 1011	No	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	082			
"	14 & x	1011 1111	Yes	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	082			
"2460813579"	15 & x	0111 1011	No	246	Yes	Yes	
		1111 1111	All, except "special" ACC on USIM	081			
"	15 & x	0111 1111	Yes	246	Yes	Yes	
Set "x" to an arbitrary value in the range 0 to 9		1111 1111	All, except "special" ACC on USIM	081			

Table 5-1b

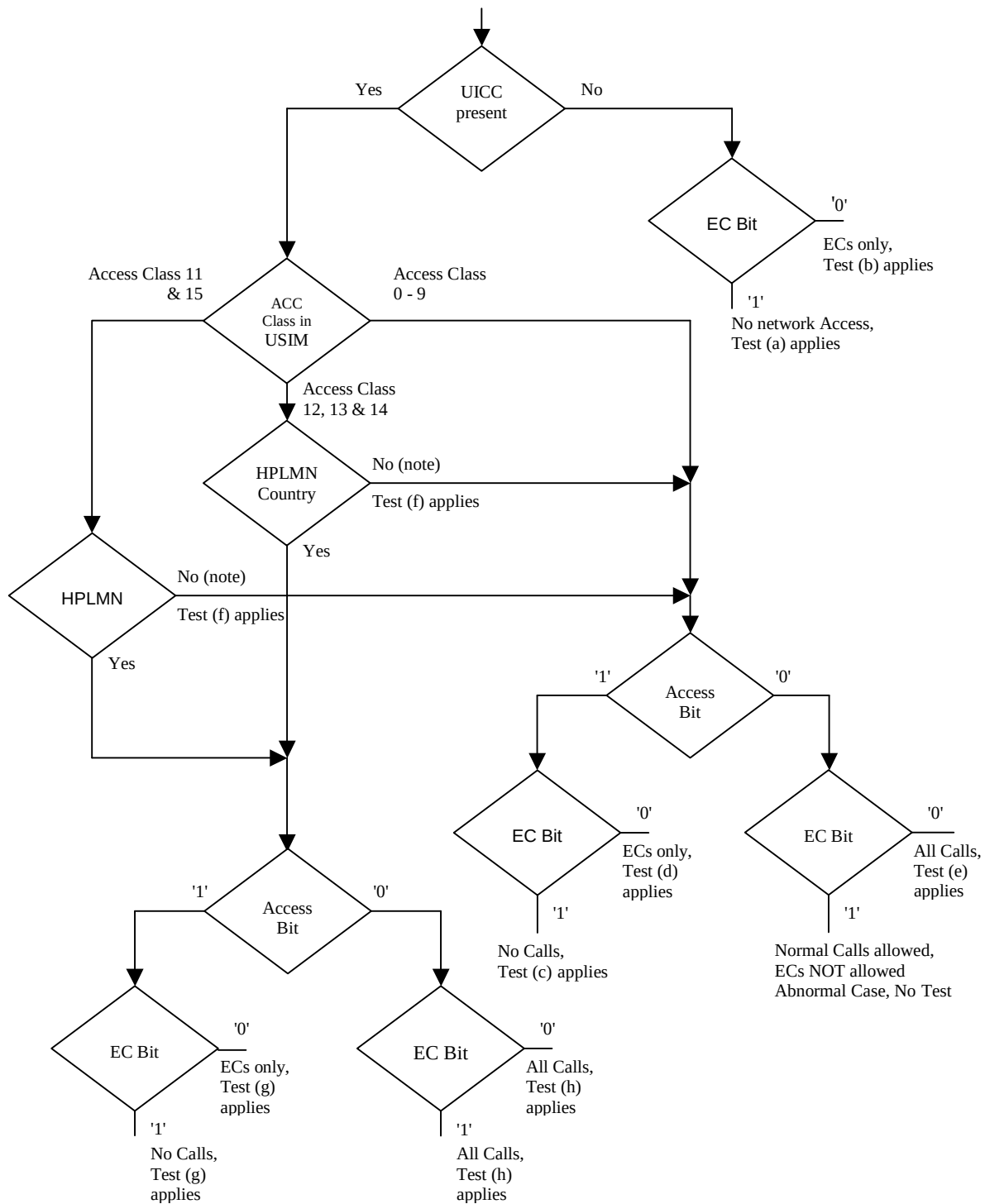
USIM			Network			Test Results	
IMSI			RACH	Informative: Cell Barred for:	BCCH/LAI	Normal Call	Emergency Call
	Access Class		Octet 3 Octet 4	Emergency Call Normal Call	MCC MNC		
Test (a)	No UICC in Terminal	N/A	0000 0100 0000 0000	Yes No	234 001	No	No
Test (b)	No UICC in Terminal	N/A	0000 0000 0000 0000	No No	234 001	No	Yes

Test (c)	"2460813579"	0	0000 0100 0000 0001	Yes No, except for ACC	246 081	No	No
	"2460813579"	1	0000 0100 0000 0010	Yes No, except for ACC	246 081	No	No
	"2460813579"	2	0000 0100 0000 0100	Yes No, except for ACC	246 081	No	No
	"2460813579"	3	0000 0100 0000 1000	Yes No, except for ACC	246 081	No	No
	"2460813579"	4	0000 0100 0001 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	5	0000 0100 0010 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	6	0000 0100 0100 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	7	0000 0100 1000 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	8	0000 0101 0000 0000	Yes No, except for ACC	246 081	No	No
	"2460813579"	9	0000 0110 0000 0000	Yes No, except for ACC	246 081	No	No
Test (d)	"2460813579"	0	0000 0000 0000 0001	No None, except for ACC	246 081	No	Yes
	"2460813579"	1	0000 0000 0000 0010	No None, except for ACC	246 081	No	Yes
	"2460813579"	2	0000 0000 0000 0100	No None, except for ACC	246 081	No	Yes
	"2460813579"	3	0000 0000 0000 1000	No None, except for ACC	246 081	No	Yes
	"2460813579"	4	0000 0000 0001 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	5	0000 0000 0010 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	6	0000 0000 0100 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	7	0000 0000 1000 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	8	0000 0001 0000 0000	No None, except for ACC	246 081	No	Yes
	"2460813579"	9	0000 0010 0000 0000	No None, except for ACC	246 081	No	Yes
Test (e)	"2460813579"	0	1111 1011 1111 1110	No All, except ACC on USIM	246 081	Yes	Yes

	"2460813579"	1	1111 1011 1111 1101	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	2	1111 1011 1111 1011	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	3	1111 1011 1111 0111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	4	1111 1011 1110 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	5	1111 1011 1101 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	6	1111 1011 1011 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2406813579"	7	1111 1011 0111 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	8	1111 1010 1111 1111	No All, except ACC on USIM	246 081	Yes	Yes
	"2460813579"	9	1111 1001 1111 1111	No All, except ACC on USIM	246 081	Yes	Yes
Test (f)	"24608135x9"	11 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	246 082	No	No
	"	11 & x	0000 0011 1111 1111	No All, except ACC greater than 11	246 082	No	Yes
	"	11 & x	0000 0000 0000 0000	No None	246 082	Yes	Yes
	"24608135x9"	12 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	244 001	No	No
	"	12 & x	0000 0011 1111 1111	No All, except ACC greater than 11	244 001	No	Yes
	"	12 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"24608135x9"	13 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	244 001	No	No
	"	13 & x	0000 0011 1111 1111	No All, except ACC greater than 11	244 001	No	Yes

Test (g)	"	13 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"24608135x9"	14 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	244 001	No	No
	"	14 & x	0000 0011 1111 1111	No All, except ACC greater than 11	244 001	No	Yes
	"	14 & x	0000 0000 0000 0000	No None	244 001	Yes	Yes
	"24608135x9"	15 & x	0000 0111 1111 1111	Yes All, except ACC greater than 11	246 082	No	No
	"	15 & x	0000 0011 1111 1111	No All, except ACC greater than 11	246 082	No	Yes
	" Set "x" to an arbitrary value in the range 0 to 9	15 & x	0000 0000 0000 0000	No None	246 082	Yes	Yes
Test (g)	"2460813579"	11 & x	0000 1111 1111 1111	Yes All normal ACC and ACC on USIM	246 081	No	No
	"	11 & x	0000 1011 1111 1111	No All normal ACC and ACC on USIM	246 081	No	Yes
	"2460813579"	12 & x	0001 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	12 & x	0001 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"2460813579"	13 & x	0010 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	13 & x	0010 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"2460813579"	14 & x	0100 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 082	No	No
	"	14 & x	0100 0011 1111 1111	No All normal ACC and ACC on USIM	246 082	No	Yes
	"2460813579"	15 & x	1000 0111 1111 1111	Yes All normal ACC and ACC on USIM	246 081	No	No
	"	15 & x	1000 0011	No	246	No	Yes

	Set "x" to an arbitrary value in the range 0 to 9		1111 1111	All normal ACC and ACC on USIM	081		
Test (h)	"2460813579"	11 & x	1111 0011 1111 1111	No All, except "special" ACC on USIM	246 081	Yes	Yes
	"	11 & x	1111 0111 1111 1111	Yes All, except "special" ACC on USIM	246 081	Yes	Yes
	"2460813579"	12 & x	1110 1011 1111 1111	No All, except "special" ACC on USIM	246 082	Yes	Yes
	"	12 & x	1110 1111 1111 1111	Yes All, except "special" ACC on USIM	246 082	Yes	Yes
	"2460813579"	13 & x	1101 1011 1111 1111	No All, except "special" ACC on USIM	246 082	Yes	Yes
	"	13 & x	1101 1111 1111 1111	Yes All, except "special" ACC on USIM	246 082	Yes	Yes
	"2460813579"	14 & x	1011 1011 1111 1111	No All, except "special" ACC on USIM	246 082	Yes	Yes
	"	14 & x	1011 1111 1111 1111	Yes All, except "special" ACC on USIM	246 082	Yes	Yes
	"2460813579"	15 & x	0111 1011 1111 1111	No All, except "special" ACC on USIM	246 081	Yes	Yes
	"	15 & x	0111 1111 1111 1111	Yes All, except "special" ACC on USIM	246 081	Yes	Yes
	Set "x" to an arbitrary value in the range 0 to 9						



- NOTE: UE adopts Access Class 0-9, based on IMSI, see TS 22.011 [6].
Access Class in USIM, See TS 31.102 [4], EF ACC, "6F 78".
- ECs: Emergency Calls.
- EC Bit: In case of GERAN:
Bit 3 of Octet 3 of RACH Control Parameters, See TS 44.018 Clause 10.5.2.29.
In case of UTRAN
Access Class 10 defined in TS 22.011 clause 4.4.
- AC Bit: See Access Class Barred List defined in TS 25.331 clause 10.3.2.1.
- HPLMN: Country means that the MCC of the VPLMN is the same as the MCC of the HPLMN.

Figure 5-1: Access control information

5.2.2 Access Control information handling for E-UTRAN/EPC

5.2.2.1 Definition and applicability

Access Control allows restriction of EPS bearer context activation access attempts. All User Equipments are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

Emergency call handling is FFS.

5.2.2.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

Reference:

- TS 31.102 [4], clause 5.1.1.
2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network, access attempts are allowed . Otherwise access attempts are not allowed.

All options are shown in figure 5-2 and are referenced to the tests.

Reference:

- TS 22.011 [6], clauses 4.3 and 4.4,
- TS 24.301 [26], clause 5.5.1.2.6,

5.2.2.3 Test purpose

- 1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

- Tests (a) to (b) UE with access class 0 to 9.
- Test (c) UE with access class 11 and 15 not in HPLMN, and
UE with access class 12,13 and 14 not in HPLMN country.
- Test (d) and (e) UE with access class 11 and 15 in HPLMN, and
UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control bits signalled by the network, as shown in table 5-2.

5.2.2.4 Method of test

5.2.2.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5-2, TAC="0001".
- Access control: see table 5-2.

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 5-2 and the UE is powered on.

NOTE: Depending on the initial value of the EF_{EPSLOCI}, the UE may perform a location update. This shall be accepted by the E-USS.

5.2.2.4.2 Coding details

EF_{IMSI}: Data Field "6F 07"

Logically:	IMSI: "2460813579"								
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	75	F9	FF	FF

Logically:	IMSI: "24608135x9"								
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	x5	F9	FF	FF

Access Control class EF_{ACC}: Data field "6F 78"

Reference:

- See TS 31.102 [4].

NETWORK (E-USS)

ac-BarringInfo in SystemInformationBlockType2 should be set as in table 5-2:

Reference

- TS 36.331 clause 6.3.1

5.2.2.4.3 Procedure

- a) The terminal is switched on and performs registration if access is allowed for signalling according to table 5-2.
- b) Using the MMI or EMMI a normal EPS bearer context setup is attempted if required by the test.
- c) The test is repeated for each set of values in table 5-2.

5.2.2.5 Acceptance criteria

After step a) the UE shall access the network, or shall make no access attempt, in accordance with table 5-2.

In case in tables 5-2 the cell is indicated as

barred = yes, in these sub-sequences, the UE shall not establish a connection

barred = no, the UE shall establish a connection.

NOTE 1: For conformance testing, to limit testing, in tests (a), (b) and (c) it is only necessary that one of the access classes is tested. This access class may be chosen randomly.

Table 5-2

USIM			Network			
IMSI	Access class:		SIBType2: ac-BarringInfo	Cell barred for ATTACH and Default EPS bearer context activation:	MCC MNC for BCCH/LAI	Cell barred for second (non-default) EPS bearer context setup:
Test (a)	"2460813579"	0	SIBType2_A01	No	246 081	Yes
	"2460813579"	1	SIBType2_A01	No	246 081	Yes
	"2460813579"	2	SIBType2_A01	No	246 081	Yes
	"2460813579"	3	SIBType2_A01	No	246 081	Yes
	"2460813579"	4	SIBType2_A01	No	246 081	Yes
	"2460813579"	5	SIBType2_A01	No	246 081	Yes
	"2460813579"	6	SIBType2_A01	No	246 081	Yes
	"2460813579"	7	SIBType2_A01	No	246 081	Yes
	"2460813579"	8	SIBType2_A01	No	246 081	Yes
	"2460813579"	9	SIBType2_A01	No	246 081	Yes
Test (b)	"2460813579"	0	SIBType2_B01	No	246 081	No
	"2460813579"	1	SIBType2_B01	No	246 081	No
	"2460813579"	2	SIBType2_B01	No	246 081	No
	"2460813579"	3	SIBType2_B01	No	246 081	No
	"2460813579"	4	SIBType2_B01	No	246 081	No
	"2460813579"	5	SIBType2_B01	No	246 081	No

	"2460813579"	6	SIBType2_B01	No	246 081	No
	"2460813579"	7	SIBType2_B01	No	246 081	No
	"2460813579"	8	SIBType2_B01	No	246 081	No
	"2460813579"	9	SIBType2_B01	No	246 081	No
Test (c)	"24608135x9"	11 & x	SIBType2_A01	No	246 082	Yes
	"	11 & x	SIBType2_C11_01	No	246 082	Yes
	"	11 & x	SIBType2_C11_02	Yes	246 082	N/A (no registration possible as initial condition)
	"24608135x9"	12 & x	SIBType2_A01	No	244 001	Yes
	"	12 & x	SIBType2_C12_01	No	244 001	Yes
	"	12 & x	SIBType2_C12_02	Yes	244 001	N/A (no registration possible as initial condition)
	"24608135x9"	13 & x	SIBType2_A01	No	244 001	Yes
	"	13 & x	SIBType2_C13_01	No	244 001	Yes
	"	13 & x	SIBType2_C13_02	Yes	244 001	N/A (no registration possible as initial condition)
	"24608135x9"	14 & x	SIBType2_A01	No	244 001	Yes
	"	14 & x	SIBType2_C14_01	No	244 001	Yes
	"	14 & x	SIBType2_C14_02	Yes	244 001	N/A (no registration possible as initial condition)
	"24608135x9"	15 & x	SIBType2_A01	No	246 082	Yes
	"	15 & x	SIBType2_C15_01	No	246 082	Yes

	"	15 & x	SIBType2_C15_02	Yes	246 082	N/A (no registration possible as initial condition)
Test (d)	"2460813579"	11 & x	SIBType2_C11_01	No	246 081	Yes
	"	11 & x	SIBType2_C11_02	Yes	246 081	N/A
	"2460813579"	12 & x	SIBType2_C12_01	No	246 082	Yes
	"	12 & x	SIBType2_C12_02	Yes	246 082	N/A
	"2460813579"	13 & x	SIBType2_C13_01	No	246 082	Yes
	"	13 & x	SIBType2_C13_02	Yes	246 082	N/A
	"2460813579"	14 & x	SIBType2_C14_01	No	246 082	Yes
	"	14 & x	SIBType2_C14_02	Yes	246 082	N/A
	"2460813579"	15 & x	SIBType2_C15_01	No	246 081	Yes
	" Set 'x' to an arbitrary value in the range 0 to 9	15 & x	SIBType2_C15_02	Yes	246 081	N/A
Test (e)	"2460813579"	11 & x	SIBType2_C11_03	No	246 081	No
	"2460813579"	12 & x	SIBType2_C12_03	No	246 082	No
	"2460813579"	13 & x	SIBType2_C13_03	No	246 082	No
	"2460813579"	14 & x	SIBType2_C14_03	No	246 082	No
	"2460813579" Set 'x' to an arbitrary value in the range 0 to 9	15 & x	SIBType2_C15_03	No	246 081	No

Specific message contents for Table 5-2

SystemInformationBlockType2 configuration **SIBType2_A01**

Derivation Path: 36.508, Table 4.4.3.3-1

Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00000'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_B01**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data	Not present		
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C11_01**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'10000'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C11_02**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'10000'B		
}			
ac-BarringForMO-Data	Not present		
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C11_03**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition

SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'01111'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C12_01**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'01000'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C12_02**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'01000'B		
}			
ac-BarringForMO-Data	Not present		
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C12_03**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'10111'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C13_01**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition

SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00100'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C13_02**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00100'B		
}			
ac-BarringForMO-Data	Not present		
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C13_03**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11011'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C14_01**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00010'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C14_02**

Derivation Path: 36.508, Table 4.4.3.3-1			

Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00010'B		
}			
ac-BarringForMO-Data	Not present		
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C14_03**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11101'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C15_01**

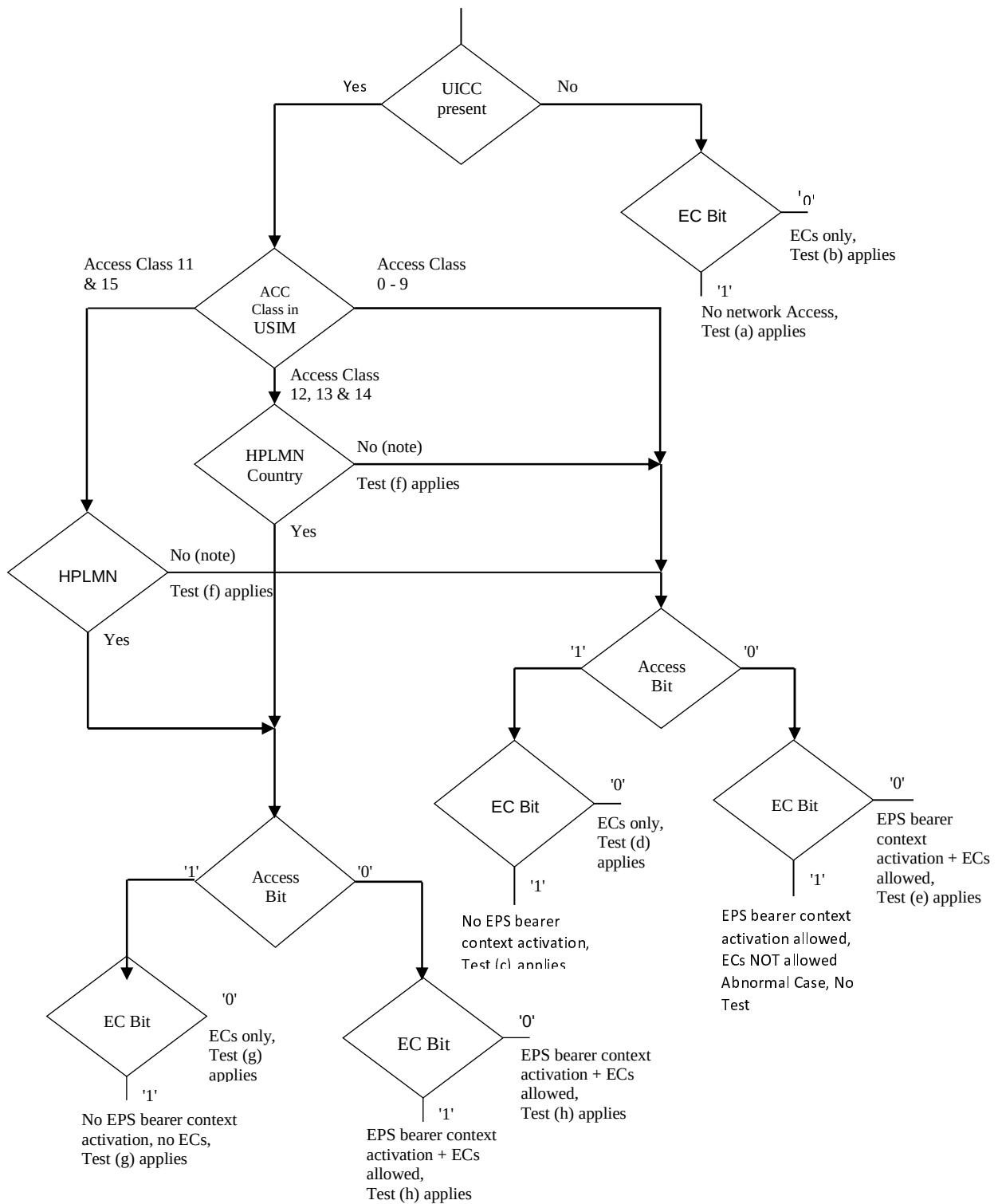
Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00001'B		
}			
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C15_02**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'00001'B		
}			
ac-BarringForMO-Data	Not present		
}			
}			

SystemInformationBlockType2 configuration **SIBType2_C15_03**

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11110'B		
}			
}			
}			



Editor's note: the flow chart is currently for information only and has to be updated to be in line with 36.331, this is TBD.

- NOTE: UE adopts Access Class 0-9, based on IMSI, see TS 22.011 [6].
Access Class in USIM, See TS 31.102 [4], EF ACC, "6F 78".
- ECs: Emergency Calls.
- EC Bit: see description in 36.331, clause 6.3.1
Access Class 10 defined in TS 22.011 clause 4.4.
- AC Bit: see description in 36.331, clause 6.3.1.
- HPLMN: Country means that the MCC of the VPLMN is the same as the MCC of the HPLMN.

Figure 5-2: Access control information

5.2.3 Access Control information handling for NB-IoT

5.2.3.1 Definition and applicability

Access Control allows restriction on RRC connection establishment attempts. All User Equipments are assigned to one out of ten randomly allocated classes, and optionally (for priority uses) also to one or more special categories.

An Access Class of the special categories is only valid in the HPLMN or HPLMN country. Otherwise, the randomly allocated class is used.

The classes are programmed on the USIM. The network controls which classes at any time may be barred.

5.2.3.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopt this value.

Reference:

- TS 31.102 [4], clause 5.1.1.

2. If the UE is a member of at least one access class which corresponds to the permitted classes as signalled over the air interface, and the access class is applicable in the serving network, access attempts are allowed. Otherwise access attempts are not allowed.

Reference:

- TS 22.011 [6], clauses 4.3 and 4.4,
- TS 24.301 [26], clause 5.5.1.2.6,

5.2.3.3 Test purpose

- 1) To verify that the Terminal reads the access control value as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify that the UE controls its network access in accordance with its access control class and the conditions imposed by the serving network.

The tests verify Terminal performance for the following:

- Tests (a) to (b) UE with access class 0 to 9.
- Test (c) UE with access class 11 and 15 not in HPLMN, and
UE with access class 12,13 and 14 not in HPLMN country.
- Test (d) and (e) UE with access class 11 and 15 in HPLMN, and
UE with access class 12,13 and 14 in HPLMN country.

Each of the above are tested against all relevant combinations of access control bits signalled by the network, as shown in table 5-3.

5.2.3.4 Method of test

5.2.3.4.1 Initial conditions

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5-3, TAC="0001".
- Access control: see table 5-3.

The default UICC is installed in the Terminal containing IMSI and access control values as given in table 5-3 and the UE is powered on.

NOTE: Depending on the initial value of the EF_{EPSLOC1}, the UE may perform a location update. This shall be accepted by the NB-SS.

5.2.3.4.2 Coding details

EF_{IMSI}: Data Field "6F 07"

Logically:	IMSI: "2460813579"								
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	75	F9	FF	FF

Logically:	IMSI: "24608135x9"								
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	06	21	64	80	31	x5	F9	FF	FF

Access Control class EF_{ACC}: Data field "6F 78"

Reference:

See TS 31.102 [4].

NETWORK (NB-SS)

ab-Enabled included in *MasterInformationBlock-NB* is set to *TRUE* and in *SystemInformationBlockType14-NB* should be set as in table 5-3.

Reference:

TS 36.331 clause 6.7.3.1.

5.2.3.4.3 Procedure

- a) The terminal is switched on and performs registration if access is allowed for signalling according to table 5-3.
- b) The test is repeated for each set of values in table 5-3.

5.2.3.5 Acceptance criteria

After step a) the UE shall access the network, or shall make no access attempt, in accordance with table 5-3.

In case in tables 5-3 the cell is indicated as

barred = yes, in these sub-sequences, the UE shall not establish a connection

barred = no, the UE shall establish a connection.

NOTE 1: For conformance testing, to limit testing, in tests (a), (b) and (c) it is only necessary that one of the access classes is tested. This access class may be chosen randomly.

Table 5-3

USIM			Network		
	IMSI	AC	SIBType14-NB: ac-Param	Cell barred for RRC connection establishment / resume :	MCC MNC for BCCH/LAI
Test (a)	"2460813579"	0	SIBType14-NB_A00	Yes	246 081
	"2460813579"	1	SIBType14-NB_A01	Yes	246 081
	"2460813579"	2	SIBType14-NB_A02	Yes	246 081
	"2460813579"	3	SIBType14-NB_A03	Yes	246 081
	"2460813579"	4	SIBType14-NB_A04	Yes	246 081
	"2460813579"	5	SIBType14-NB_A05	Yes	246 081
	"2460813579"	6	SIBType14-NB_A06	Yes	246 081
	"2460813579"	7	SIBType14-NB_A07	Yes	246 081
	"2460813579"	8	SIBType14-NB_A08	Yes	246 081
	"2460813579"	9	SIBType14-NB_A09	Yes	246 081
Test (b)	"2460813579"	0	SIBType14-NB_B01	No	246 081
	"2460813579"	1	SIBType14-NB_B01	No	246 081
	"2460813579"	2	SIBType14-NB_B01	No	246 081
	"2460813579"	3	SIBType14-NB_B01	No	246 081
	"2460813579"	4	SIBType14-NB_B01	No	246 081
	"2460813579"	5	SIBType14-NB_B01	No	246 081
	"2460813579"	6	SIBType14-NB_B01	No	246 081
	"2460813579"	7	SIBType14-NB_B01	No	246 081
	"2460813579"	8	SIBType14-NB_B01	No	246 081
	"2460813579"	9	SIBType14-NB_B01	No	246 081
Test (c)	"24608135x9"	11 & 2	SIBType14-NB_C11_01	Yes	246 082
	"	11 & 2	SIBType14-NB_C11_02	Yes	246 082
	"24608135x9"	12 & 5	SIBType14-NB_C12_01	Yes	244 001
	"	12 & 5	SIBType14-NB_C12_02	Yes	244 001
	"24608135x9"	13 & 4	SIBType14-NB_C13_01	Yes	244 001
	"	13 & 4	SIBType14-NB_C13_02	Yes	244 001
	"24608135x9"	14 & 9	SIBType14-NB_C14_01	Yes	244 001
	"	14 & 9	SIBType14-NB_C14_02	Yes	244 001

	"24608135x9"	15 & 0	SIBType14-NB_C15_01	Yes	246 082
	"	15 & 0	SIBType14-NB_C15_02	Yes	246 082
Test (d)	"2460813579"	11 & 2	SIBType14-NB_C11_01	Yes	246 081
	"2460813579"	12 & 5	SIBType14-NB_C12_01	Yes	246 082
	"2460813579"	13 & 4	SIBType14-NB_C13_01	Yes	246 082
	"2460813579"	14 & 9	SIBType14-NB_C14_01	Yes	246 082
	"2460813579"	15 & 0	SIBType14-NB_C15_01	Yes	246 081
Test (e)	"2460813579"	11 & 2	SIBType14-NB_C11_03	No	246 081
	"2460813579"	12 & 5	SIBType14-NB_C12_03	No	246 082
	"2460813579"	13 & 4	SIBType14-NB_C13_03	No	246 082
	"2460813579"	14 & 9	SIBType14-NB_C14_03	No	246 082
	"2460813579"	15 & 0	SIBType14-NB_C15_03	No	246 081

Specific message contents for Table 5-3

SystemInformationBlockType14-NB configuration SIBType14-NB_A00

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'1000000000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0100000000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A02

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0010000000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A03

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0001000000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A04

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000100000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A05

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000010000'B		
ab-BarringExceptionData-r13	Not present		

ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A06

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000001000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A07

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000000100'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A08

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000000010'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_A09

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition

SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000000001'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_B01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000000000'B		
ab-BarringExceptionData-r13	Not present		
ab-BarringForSpecialAC-r13	'00000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C11_01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0010000000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'10000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C11_02

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	b		
ab-BarringBitmap-r13	'0010000000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'10000'B		
}			
}			
lateNonCriticalExtension	Not present		

}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C11_03

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0010000000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'01111'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C12_01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000010000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'01000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C12_02

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	b		
ab-BarringBitmap-r13	'0000010000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'01000'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C12_03

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			

ab-Category-r13	a		
ab-BarringBitmap-r13	'0000010000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'10111'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C13_01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000100000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'00100'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C13_02

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	b		
ab-BarringBitmap-r13	'0000100000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'00100'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C13_03

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000100000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'11011'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C14_01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000000001'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'00010'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C14_02

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	b		
ab-BarringBitmap-r13	'0000000001'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'00010'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C14_03

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'0000000001'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'11101'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C15_01

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'1000000000'B		
ab-BarringExceptionData-r13	FALSE		

ab-BarringForSpecialAC-r13	'00001'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C15_02

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	b		
ab-BarringBitmap-r13	'1000000000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'00001'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

SystemInformationBlockType14-NB configuration SIBType14-NB_C15_03

Derivation Path: 36.508 Table 8.1.4.3.3-5			
Information Element	Value/remark	Comment	Condition
SystemInformationBlockType14-NB-r13 ::= SEQUENCE {			
ab-Param-r13 CHOICE {			
ab-Common-r13 SEQUENCE {			
ab-Category-r13	a		
ab-BarringBitmap-r13	'1000000000'B		
ab-BarringExceptionData-r13	FALSE		
ab-BarringForSpecialAC-r13	'11110'B		
}			
}			
lateNonCriticalExtension	Not present		
}			

5.3 Handling subscription identifier privacy for 5G

5.3.1 SUCI calculation by ME using null scheme

5.3.1.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers in the USIM that the operator allows. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in the order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

The ME shall calculate the SUCI using the null-scheme if the highest priority of the protection schemes listed in the USIM is the null-scheme.

5.3.1.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EF_{SUCI_Calc_Info}.
- 3) The ME shall calculate the SUCI using the null-scheme if highest priority of the protection schemes listed in the USIM is the null-scheme.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- TS 33.501 [41], clause Annex C;
- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.3.1.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{IMSI} commands are performed correctly by the ME.
- 2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

5.3.1.4 Method of test

5.3.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – null-scheme

Key Index 1: 0

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 1

Protection Scheme Identifier 3 – ECIES scheme profile A

Key Index 3: 2

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E
BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3
F9 00 E3 B4

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	A0	06	00	00	02	01	01	02
	B9	B10	B11	B12	B13	B14	B15	B16
	A1	6B	80	01	1B	81	41	04
	B17	B18	B19	B20	B21	B22	B23	B24
	72	DA	71	97	62	34	CE	83
	B25	B26	B27	B28	B29	B30	B31	B32
	3A	69	07	42	58	67	B8	2E
	B33	B34	B35	B36	B37	B38	B39	B40
	07	4D	44	EF	90	7D	FB	4B
	B41	B42	B43	B44	B45	B46	B47	B48
	3E	21	C1	C2	25	6E	BC	D1
	B49	B50	B51	B52	B53	B54	B55	B56
	5A	7D	ED	52	FC	BB	09	7A
	B57	B58	B59	B60	B61	B62	B63	B64
	4E	D2	50	E0	36	C7	B9	C8
	B65	B66	B67	B68	B69	B70	B71	B72
	C7	00	4C	4E	ED	C4	F0	68
	B73	B74	B75	B76	B77	B78	B79	B80
	CD	7B	F8	D3	F9	00	E3	B4
	B81	B82	B83	B84	B85	B86	B87	B88
	80	01	1E	81	20	5A	8D	38
	B89	B90	B91	B92	B93	B94	B95	B96
	86	48	20	19	7C	33	94	B9
	B97	B98	B99	B100	B101	B102	B103	B104
	26	13	B2	0B	91	63	3C	BD
	B105	B106	B107	B108	B109	B110	B111	B112
	89	71	19	27	3B	F8	E4	A6
	B113	B114	B115	B116	B117			
	F4	EE	C0	A6	50			

The UICC is installed into the ME.

5.3.1.4.2 Procedure

- a) The UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{IMSI} , $EF_{Routing\_Indicator}$ and $EF_{SUCI\_Calc\_Info}$.
- 2) In step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 357935793

5.3.2 SUCI calculation by ME using Profile B

5.3.2.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

5.3.2.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EF_{SUCI_Calc_Info}.
- 3) The ME shall calculate the SUCI using the ECIES scheme profile B if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile B.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- 3GPP TS 33.501 [41], clause Annex C;
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.3.2.3 Test purpose

- 1) To verify that the READ EF_{Routing_Indicator}, EF_{SUCI_Calc_Info} and EF_{IMSI} commands are performed correctly by the terminal.
- 2) To verify that the ME performs the SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile B and the home network public key).

5.3.2.4 Method of test

5.3.2.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the ME.

The NG-SS shall be configured with Home Network Private Key as following:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	F1	AB	10	74	47	7E	BC	C7
	B9	B10	B11	B12	B13	B14	B15	B16
	F5	54	EA	1C	5F	C3	68	B1
	B17	B18	B19	B20	B21	B22	B23	B24
	61	67	30	15	5E	00	41	AC
	B25	B26	B27	B28	B29	B30	B31	B32

44	7D	63	01	97	5F	EC	DA

5.3.2.4.2 Procedure

- The UE is switched on.
- The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of REGISTRATION ACCEPT message with a new 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.2.5 Acceptance criteria

- After step a) the ME shall read EF_{IMSI}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}.
- After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.3.3 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B

5.3.3.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

5.3.3.2 Conformance requirement

- SUCI calculation procedure shall be performed by the USIM if service n°124 is "available" in EF_{UST} and service n°125 is "available" in EF_{UST}.
- The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.
- This GET IDENTITY command shall be as per 7.5.2 in 3GPP TS 31.102 [4].

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 5.3.48 and 7.5;
- 3GPP TS 33.501 [41], clause Annex C;
- 3GPP TS 24.501 [42], clause 5.5.1.2.2, 5.5.1.2.4.

5.3.3.3 Test purpose

- 1) To verify that the GET IDENTITY command is performed correctly by the ME.
- 2) To verify that the ME includes the SUCI received from the 5G-NR UICC within GET IDENTITY response in the 5GS mobile identity IE.

5.3.3.4 Method of test

5.3.3.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the ME.

The NG-SS shall be configured with Home Network Private Key for profile B:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	F1	AB	10	74	47	7E	BC	C7
	B9	B10	B11	B12	B13	B14	B15	B16
	F5	54	EA	1C	5F	C3	68	B1
	B17	B18	B19	B20	B21	B22	B23	B24
	61	67	30	15	5E	00	41	AC
	B25	B26	B27	B28	B29	B30	B31	B32
	44	7D	63	01	97	5F	EC	DA

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n° 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support available
 SUCI calculation by USIM available

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx1 111x			

5G-NR UICC is configured with:

Protection Scheme Identifier: ECIES scheme profile B

Key Index: 1

Home Network Public Key Identifier: 27

Home Network Public Key:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	04	72	DA	71	97	62	34	CE
	B9	B10	B11	B12	B13	B14	B15	B16
	83	3A	69	07	42	58	67	B8

B17	B18	B19	B20	B21	B22	B23	B24
2E	07	4D	44	EF	90	7D	FB
B25	B26	B27	B28	B29	B30	B31	B32
4B	3E	21	C1	C2	25	6E	BC
B33	B34	B35	B36	B37	B38	B39	B40
D1	5A	7D	ED	52	FC	BB	09
B41	B42	B43	B44	B45	B46	B47	B48
7A	4E	D2	50	E0	36	C7	B9
B49	B50	B51	B52	B53	B54	B55	B56
C8	C7	00	4C	4E	ED	C4	F0
B57	B58	B59	B60	B61	B62	B63	B64
68	CD	7B	F8	D3	F9	00	E3
B65							
B4							

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME

5.3.3.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.3.3.5 Acceptance criteria

- After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC
- After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.3.4 UE identification by SUCI in response to IDENTITY REQUEST message

5.3.4.1 Definition and applicability

The identification procedure is specified to request a particular UE to provide specific identification parameters, e.g. the SUCI or the IMEI. The SUCI is a privacy preserving identifier containing the concealed SUPI and IMEI is a format of PEI.

The network initiates the identification procedure by sending an IDENTITY REQUEST message to the UE and starting timer T3570. The IDENTITY REQUEST message specifies the requested identification parameters in the Identity type information element and the UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.

5.3.4.2 Conformance requirement

- A UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.
- Upon receipt of the IDENTITY REQUEST message, if the Identity type IE in the IDENTITY REQUEST message is set to "SUCI", the UE shall:

- if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and
 - if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.
- 3) If the REGISTRATION ACCEPT message contained a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- TS 33.501 [41], clauses 6.12.4 and Annex C;
- TS 24.501 [42], clauses 5.5.1.2.4, 5.4.3 and 5.2.3.2.5.

5.3.4.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{IMSI} commands are performed correctly by the terminal.
- 2) To verify that the UE will perform SUCI calculation procedure correctly.
- 3) To verify that upon reception of the IDENTITY REQUEST message with Identity type IE set to "SUCI", the UE will:
 - if timer T3519 is not running, generate a fresh SUCI, send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and
 - if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI
- 4) To verify that upon reception of the REGISTRATION ACCEPT message containing a 5G-GUTI UE deletes the stored SUCI and stops timer T3519 if running.

5.3.4.4 Method of test

5.3.4.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A - TAI (MCC/MNC/TAC):244/083/000001.

Access control: unrestricted.

Cell B - TAI (MCC/MNC/TAC):244/084/000001.

Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U2 NOT UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	01				

The UICC is installed into the terminal.

5.3.4.4.2 Procedure

- a) Bring up the Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- c) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI" and starts timer T3570.
- d) The UE sends IDENTITY RESPONSE message with the fresh generated SUCI, starts timer T3519 and stores the value of the SUCI sent in the IDENTITY RESPONSE message.
- e) NG-SS should ignore the IDENTITY RESPONSE sent by the UE and shall resend IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI" before the expiry of T3519.
- f) The UE sends the IDENTITY RESPONSE message with the stored SUCI.
- g) NG-SS accepts IDENTITY RESPONSE message and stops timer T3570 if running and upon reception of REGISTRATION ACCEPT message with a 5G-GUTI by UE, UE sends REGISTRATION COMPLETE message to the NG-SS, stops T3519, T3510 if running and deletes stored SUCI.
- h) Bring down Cell A and bring up Cell B.
- i) The UE sends REGISTRATION REQUEST to the Cell B NG-SS indicating the 5GS registration type IE as "mobility registration updating" or as "initial registration", and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- j) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI" and starts timer T3570.
- k) The UE sends IDENTITY RESPONSE message with the fresh generated SUCI, starts timer T3519 and stores the value of the SUCI sent in the IDENTITY RESPONSE message.
- l) NG-SS accepts IDENTITY RESPONSE message and stops timer T3570 if running and upon reception of REGISTRATION ACCEPT message with a 5G-GUTI by UE, UE sends REGISTRATION COMPLETE message to the NG-SS, stops T3519, T3510 if running and deletes stored SUCI.

5.3.4.5 Acceptance criteria

- a) In step d) the UE shall send IDENTITY RESPONSE with new generated SUCI.
- b) In step f) the UE shall send IDENTITY RESPONSE with the same SUCI generated in step d).
- c) In step k) the UE shall send IDENTITY RESPONSE with new generated SUCI.

5.3.5 UE identification by SUCI in response to IDENTITY REQUEST message with T3519 timer expiry

5.3.5.1 Definition and applicability

The identification procedure is specified to request a particular UE to provide specific identification parameters, e.g. the SUCI or the IMEI. The SUCI is a privacy preserving identifier containing the concealed SUPI and IMEI is a format of PEI.

The network initiates the identification procedure by sending an IDENTITY REQUEST message to the UE and starting timer T3570. The IDENTITY REQUEST message specifies the requested identification parameters in the Identity type information element and the UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.

5.3.5.2 Conformance requirement

- 1) A UE shall be ready to respond to an IDENTITY REQUEST message at any time whilst in 5GMM-CONNECTED mode.
- 2) Upon receipt of the IDENTITY REQUEST message, if the Identity type IE in the IDENTITY REQUEST message is set to "SUCI", the UE shall:
 - if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and
 - if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.
- 3) If the REGISTRATION ACCEPT message contained a 5G-GUTI, the UE shall return a REGISTRATION COMPLETE message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI.
- 4) On expiry of T3519 (60s) timer UE shall delete stored SUCI (Table 10.2.1 in 3GPP TS 24.501 [42]).
- 5) During initial registration the UE handles the 5GS mobile identity IE in the following order as defined in TS 24.501 [42] clause 5.5.1.2.2:
 - b) a valid 5G-GUTI assigned by the same PLMN;
 - c) a valid 5G-GUTI assigned by an equivalent PLMN;
 - d) a valid 5G-GUTI assigned by any other PLMN;
 - e) a SUCI is available in the UE;

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- 3GPP TS 33.501 [41], clauses 6.12.2 and Annex C;
- 3GPP TS 24.501 [42], clauses 5.5.1.2.2, 5.5.1.2.4, 5.4.3 and 10.2.

5.3.5.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{IMS} commands are performed correctly by the terminal.
- 2) To verify that the UE will perform SUCI calculation procedure correctly.
- 3) To verify that upon reception of the IDENTITY REQUEST message with Identity type IE set to "SUCI", the UE will:
 - if timer T3519 is not running, generate a fresh SUCI, send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and

- if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.
- 4) To verify that upon expiry of T3519 UE deletes the stored SUCI.
- 5) To verify UE handles the 5GS mobile identity IE in the correct order during initial registration and use 5G-GUTI as identity when it has a valid 5G-GUTI and the SUCI both.

5.3.5.4 Method of test

5.3.5.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A -TAI (MCC/MNC/TAC): 244/083/000001.

- CellIdentity: "000000001"

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/083/000001.

- CellIdentity: "000000002"

Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U2 NOT UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	01				

The UICC is installed into the Terminal.

5.3.5.4.2 Procedure

- a) Bring up the Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- c) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI", then the UE sends IDENTITY RESPONSE message with the fresh generated SUCI, starts timer T3519 and stores the value of the SUCI sent in the IDENTITY RESPONSE message.

- d) Bring down Cell A and bring up Cell B before the expiry of T3519 and the UE shall stop timer T3510.
- e) While T3519 is still running, the UE sends *REGISTRATION REQUEST* to the Cell B NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- f) NG-SS sends *IDENTITY REQUEST* message to the UE indicating Identity type information element is "SUCI", then the UE sends *IDENTITY RESPONSE* message with the stored SUCI.
- g) Bring down Cell B and bring up Cell A after 70 sec (that is, after T3519 expires) and the UE shall stop timer T3510.
- h) The UE sends *REGISTRATION REQUEST* to the Cell A NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- i) NG-SS sends *IDENTITY REQUEST* message to the UE indicating Identity type information element is "SUCI", then the UE sends *IDENTITY RESPONSE* message with a freshly generated SUCI, start timer T3519 and store the value of the SUCI sent in the *IDENTITY RESPONSE* message.
- j) NG-SS sends *REGISTRATION ACCEPT* message with a 5G-GUTI.
- k) Upon reception of *REGISTRATION ACCEPT* message, the UE sends *REGISTRATION COMPLETE* message to the NG-SS, stops timers T3510 and T3519 if running and deletes any stored SUCI.

5.3.5.5 Acceptance criteria

- a) In step c) the UE shall send *IDENTITY RESPONSE* with new generated SUCI.
- b) In step f) the UE shall send *IDENTITY RESPONSE* with the stored SUCI in step c).
- c) In step i) the UE shall send *IDENTITY RESPONSE* with new generated SUCI.

5.3.6 UE identification by SUCI in response to *IDENTITY REQUEST* message and *AUTHENTICATION REJECT*

5.3.6.1 Definition and applicability

The identification procedure is specified to request a particular UE to provide specific identification parameters, e.g. the SUCI or the IMEI. The SUCI is a privacy preserving identifier containing the concealed SUPI and IMEI is a format of PEI.

The network initiates the identification procedure by sending an *IDENTITY REQUEST* message to the UE and starting timer T3570. The *IDENTITY REQUEST* message specifies the requested identification parameters in the Identity type information element and the UE shall be ready to respond to an *IDENTITY REQUEST* message at any time whilst in 5GMM-CONNECTED mode.

5.3.6.2 Conformance requirement

- 1) A UE shall be ready to respond to an *IDENTITY REQUEST* message at any time whilst in 5GMM-CONNECTED mode.
- 2) Upon receipt of the *IDENTITY REQUEST* message, if the Identity type IE in the *IDENTITY REQUEST* message is set to "SUCI", the UE shall:
 - if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an *IDENTITY RESPONSE* message with the SUCI, start timer T3519 and store the value of the SUCI sent in the *IDENTITY RESPONSE* message; and
 - if timer T3519 is running, send an *IDENTITY RESPONSE* message with the stored SUCI.
- 3) If the *REGISTRATION ACCEPT* message contained a 5G-GUTI, the UE shall return a *REGISTRATION COMPLETE* message to the AMF to acknowledge the received 5G-GUTI, stop timer T3519 if running, and delete any stored SUCI.

- 4) If the AUTHENTICATION REJECT message is received by the UE, the UE shall abort any 5GMM signalling procedure, stop any of the timers T3510, T3516, T3517, T3519 or T3521 (if they were running), delete stored SUCI and enter state 5GMM-DEREGISTERED.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- TS 33.501 [41], clauses 6.12.2 and Annex C;
- TS 24.501 [42], clauses 5.5.1.2.2, 5.5.1.2.4, 5.4.3, 5.4.1.3.5 and 5.4.1.2.2.11.

5.3.6.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{IMSI} commands are performed correctly by the terminal.
- 2) To verify that the UE will perform SUCI calculation procedure correctly.
- 3) To verify that upon reception of the IDENTITY REQUEST message with Identity type IE set to "SUCI", the UE will:
 - if timer T3519 is not running, generate a fresh SUCI as specified in 3GPP TS 33.501 [41], send an IDENTITY RESPONSE message with the SUCI, start timer T3519 and store the value of the SUCI sent in the IDENTITY RESPONSE message; and
 - if timer T3519 is running, send an IDENTITY RESPONSE message with the stored SUCI.
- 4) To verify that upon receiving AUTHENTICATION REJECT UE deletes the stored SUCI.

5.3.6.4 Method of test

5.3.6.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A -TAI (MCC/MNC/TAC): 244/083/000001.

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/084/000001.

Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U2 NOT UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16

02	66	43	65	87	42	34	80
B17	B18	B19	B20				
00	00	01	01				

The UICC is installed into the Terminal.

5.3.6.4.2 Procedure

- a) Bring up the Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the Cell A, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- c) NG-SS sends IDENTITY REQUEST message to the UE indicating Identity type information element is "SUCI", then the UE sends IDENTITY RESPONSE message with the fresh generated SUCI and start T3519 timer.
- d) NG-SS sends AUTHENTICATION REQUEST to the UE.
- e) Upon receiving AUTHENTICATION RESPONSE from UE, NG-SS sends AUTHENTICATION REJECT.
- f) UE stops T3510 and T3519 timers and deletes the stored SUCI.
- g) Bring down Cell A and bring up Cell B, switch off and then switch on UE.
- h) The UE sends REGISTRATION REQUEST to the Cell B, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI", with fresh SUCI then the UE starts timers T3519, T3510.
- i) NG-SS sends REGISTRATION ACCEPT message with a 5G-GUTI.
- j) Upon reception of REGISTRATION ACCEPT message, the UE sends REGISTRATION COMPLETE message to the NG-SS, stops timers T3510 and T3519 if running and deletes any stored SUCI.

5.3.6.5 Acceptance criteria

- a) In step c) the UE shall send IDENTITY RESPONSE with new generated SUCI
- b) In step h) the UE shall send REGISTRATION REQUEST with a fresh generated SUCI.

5.3.7 SUCI calculation by the ME using null scheme – missing parameters for subscription identifier privacy support by the USIM

5.3.7.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

The ME shall calculate the SUCI using the null-scheme if one or more parameters (i.e. Home Network Public Key, Protection Scheme Identifier) required for the calculation of the SUCI are not provisioned in the USIM.

5.3.7.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) As part of the SUCI calculation performed by the ME, the ME shall perform reading procedure on EF_{SUCI_Calc_Info} and EF_{Routing_Indicator}.

- 3) The ME shall calculate the SUCI using the null-scheme if no Protection Scheme Identifier is provisioned in the USIM or if there is no Home Network Public Key configured in the USIM for the highest priority protection scheme configured in the USIM that the ME supports.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- 3GPP TS 33.501 [41], clause Annex C;
- 3GPP TS 24.501 [42], clause 5.5.1.2.2.

5.3.7.3 Test purpose

- 1) To verify that the READ EF_{UST}, EF_{IMSI}, EF_{SUCI_Calc_Info} and EF_{Routing_Indicator} commands are performed correctly by the ME.
- 2) To verify that the ME performs SUCI calculation procedure using null-scheme.

5.3.7.4 Method of test

5.3.7.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exceptions:

The USIM does not have the Home Network Public Key configured for the highest priority protection scheme configured in the USIM that the ME supports.

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

null

Coding:	B1	B2	B3	B4	B5	B6
Hex	A0	02	01	01	A1	00

The UICC is installed into the ME.

5.3.7.4.2 Procedure

- a) The UE is switched on.
- b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.3.7.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{IMSI}, EF_{UST}, EF_{SUCI_Calc_Info} and EF_{Routing_Indicator}
- 2) After step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081
Routing indicator: 17
Protection scheme id: 00
Home network public key Id: 0
Scheme output: 357935793

5.3.8 UE identification by 5G-GUTI – Last Registered TAI stored on USIM

5.3.8.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

5.3.8.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

- a) 5G-GUTI;
- b) last visited registered TAI; and
- c) 5GS update status.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 31.102 [4], clause 4.4.11.2;
- TS 24.501 [42], clauses 5.3.3, 5.5.1.2 and Annex C.

5.3.8.3 Test purpose

- 1) To verify that the READ EF_{IMSI} and EF_{5GS3GPPLOC} commands are performed correctly by the ME.
- 2) To verify that the ME uses 5G-GUTI in the Registration Request.

5.3.8.4 Method of test

5.3.8.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000002.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{5GS3GPPLOC} (5GS 3GPP location information)

Logically:

5G-GUTI:
MCC: 244
MNC: 083
AMF Region ID: 0

AMF Set ID: 4
 AMF Pointer: 2
 5G-TMSI: 66 43 65 87
 Last visited registered TAI in 5GS for 3GPP access: 244 083 000001
 5GS update status for 3GPP access: 5U2 NOT UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	01				

The UICC is installed into the Terminal.

5.3.8.4.2 Procedure

- Bring up the NG-SS and the UE is switched on.
- The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration". and 5GS mobile identity information element type "5G-GUTI.
- Upon reception of REGISTRATION ACCEPT message with the new 5G-GUTI (244083 00010266555555) and the 5GS TAI list with TAI (244 083 000002) UE sends REGISTRATION COMPLETE message to the NG-SS and stops timer T3510 if running.
- Power reset the UE. Valid NAS security context gets updated in the USIM
- The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.8.5 Acceptance criteria

- After steps a) and e) the ME shall read EF_{IMSI} and EF_{5GS3GPPLOC1}.
- In step e) the UE shall use new 5G-GUTI and Last visited TAI in the REGISTRATION REQUEST:

5G-GUTI: 24408300010266555555

TAI (MCC/MNC/TAC): 244/083/000002

5.3.9 UE identification by 5G-GUTI – Last Registered TAI stored by ME

5.3.9.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

5.3.9.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

- 5G-GUTI;
- last visited registered TAI; and

- c) 5GS update status.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2, 5.2.3.2.5 and Annex C.

5.3.9.3 Test purpose

- 1) To verify that the READ EF_{IMSI} command is performed correctly by the ME.
- 2) To verify that the ME uses 5G-GUTI in the Registration Request.
- 3) To verify that the ME stores the new 5G-GUTI in its non-volatile memory if the corresponding file is not present in the USIM.

5.3.9.4 Method of test

5.3.9.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A -TAI (MCC/MNC/TAC): 244/083/000001.

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/084/000001.

Access control: unrestricted.

The default E-UTRAN UICC is used and installed into the Terminal.

5.3.9.4.2 Procedure

- a) Bring up the Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration".
- c) The NG-SS sends a REGISTRATION ACCEPT message with the following parameters:
5G-GUTI:244083 00010266436587
TAI: 244 083 000001
- d) The UE sends REGISTRATION COMPLETE message to the NG-SS.
- e) The UE is switched off.
- f) The UE is switched on.
- g) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.
- h) The NG-SS sends REGISTRATION ACCEPT message with the following parameters:
5G-GUTI:244 083 00010266434444
TAI: 244 083 000001

- i) The UE sends REGISTRATION COMPLETE message to the NG-SS and stops timer T3510.
- j) Turn cell A off, then turn cell B on.
- k) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the 5GS registration type IE as "mobility registration updating" or as "initial registration" and 5GS mobile identity information element type "5G-GUTI", then the UE starts timer T3510.

5.3.9.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{IMSI}.
- 2) In step g) the UE shall use in the REGISTRATION REQUEST the following parameters:
5G-GUTI:244083 00010266436587
Last visited registered TAI: 244 083 000001
- 3) In step k) the UE shall use in the REGISTRATION REQUEST with the following parameters:
5G-GUTI:244 083 00010266434444
Last visited registered TAI: 244 083 000001

5.3.10 UE identification after SUPI is changed

5.3.10.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

5.3.10.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

- a) 5G-GUTI;
- b) last visited registered TAI;
- c) 5GS update status; and
- d) 5G NAS security context parameters from a full native 5G NAS security context.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2 and Annex C.

5.3.10.3 Test purpose

- 1) To verify that the READ EF_{IMSI} command is performed correctly by the ME.
- 2) To verify that the ME deletes the 5GMM parameters from non-volatile memory in case SUPI is changed.

5.3.10.4 Method of test

5.3.10.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default E-UTRAN UICC is used and installed into the Terminal.

5.3.10.4.2 Procedure

- a) The UE is switched on.
- b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicates the 5GS registration type IE as "initial registration".
- c) The NG-SS sends a *REGISTRATION ACCEPT* message with the following parameters:
5G-GUTI:24408300010266436587
TAI: 244 083 000001
- d) The UE sends a *REGISTRATION COMPLETE* message to the NG-SS.
- e) The UE is switched off, change the UICC configuration by setting the IMSI to (24681685533963)
- f) The UE is switched on.
- g) The UE sends *REGISTRATION REQUEST* to the NG-SS.

5.3.10.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{IMSI}
- 2) In step g) the UE shall not use the 5G-GUTI or the Last visited registered TAI parameters in the *REGISTRATION REQUEST* message, instead it shall use SUCI as 5GS mobile identity IE.

5.3.11 SUCI calculation by ME using Profile A

5.3.11.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

5.3.11.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}.
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EF_{SUCI_Calc_Info}.
- 3) The ME shall calculate the SUCI using the ECIES scheme profile A if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile A

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- 3GPP TS 33.501 [41], clause Annex C;
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.3.11.3 Test purpose

- 1) To verify that the READ EF_{Routing_Indicator}, EF_{SUCI_Calc_Info} and EF_{IMSI} commands are performed correctly by the ME.
- 2) To verify that the terminal performs SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile A and the Home Network Public Key).

5.3.11.4 Method of test

5.3.11.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The 5G-NR UICC is configured with the following parameters in the order of priority and installed into the ME.

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile A

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 30

Home Network Public Key 1:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Home Network Public Key 2 Identifier: 27

Home Network Public Key 2:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

The NG-SS shall be configured with Home Network Private Key as following (for Profile A):

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	C5	3C	22	20	8B	61	86	0B
	B9	B10	B11	B12	B13	B14	B15	B16
	06	C6	2E	54	06	A7	B3	30
	B17	B18	B19	B20	B21	B22	B23	B24
	C2	B5	77	AA	55	58	98	15
	B25	B26	B27	B28	B29	B30	B31	B32
	10	D1	28	24	7D	38	BD	1D

5.3.11.4.2 Procedure

- The UE is switched on.
- The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.11.5 Acceptance criteria

- After step a) the ME shall read EF_{IMSI}, EF_{UST}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}.
- After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.3.12 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile A

5.3.12.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

5.3.12.2 Conformance requirement

- SUCI calculation procedure shall be performed by the USIM if service n°124 is "available" in EF_{UST} and service n°125 is "available" in EF_{UST}.
- The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.
- This GET IDENTITY command shall be as per 7.5.2 in TS 31.102

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 5.3.48 and 7.5;

- TS 33.501 [41], clause Annex C;
- TS 24.501 [42], clause 5.5.1.2.2.

5.3.12.3 Test purpose

- 1) To verify that the GET IDENTITY command is performed correctly by the terminal.
- 2) To verify that the terminal includes the SUCI received from the 5G-NR UICC within GET IDENTITY response in the 5GS mobile identity IE.

5.3.12.4 Method of test

5.3.12.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the Terminal.

The NG-SS shall be configured with Home Network Private Key for profile A:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	C5	3C	22	20	8B	61	86	0B
	B9	B10	B11	B12	B13	B14	B15	B16
	06	C6	2E	54	06	A7	B3	30
	B17	B18	B19	B20	B21	B22	B23	B24
	C2	B5	77	AA	55	58	98	15
	B25	B26	B27	B28	B29	B30	B31	B32
	10	D1	28	24	7D	38	BD	1D

EF_{UST} (USIM Service Table)

Logically:

- User controlled PLMN selector available
- Fixed dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n° 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications available
- 5GS Mobility Management Information available
- 5G Security Parameters available
- Subscription identifier privacy support available
- SUCI calculation by USIM available

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			

xxxx xxxx xxxx xxxx xx11 xxxx xxx1 111x

5G-NR UICC is configured with:

Protection Scheme Identifier: ECIES scheme profile A

Key Index: 1

Home Network Public Key Identifier: 30

Home Network Public Key:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	5A	8D	38	86	48	20	19	7C
	B9	B10	B11	B12	B13	B14	B15	B16
	33	94	B9	26	13	B2	0B	91
	B17	B18	B19	B20	B21	B22	B23	B24
	63	3C	BD	89	71	19	27	3B
	B25	B26	B27	B28	B29	B30	B31	B32
	F8	E4	A6	F4	EE	C0	A6	50

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME

5.3.12.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.3.12.5 Acceptance criteria

- After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC
- After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.3.13 SUCI calculation by ME using null scheme– no Protection Scheme Identifier provisioned in the USIM

5.3.13.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, and the home network operator has not provisioned any Protection Scheme Identifier definition in the list of Protection Scheme Identifiers in the USIM, the ME shall calculate the SUCI using the null-scheme.

5.3.13.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure on EF_{SUCI_Calc_Info} and EF_{Routing_Indicator}.
- 3) The ME shall calculate the SUCI using the null-scheme if no Protection Scheme Identifier is provisioned in the USIM.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- TS 33.501 [41], clause 6.12.2, Annex C;
- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.3.13.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{IMSI} commands are performed correctly by the ME.
- 2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

5.3.13.4 Method of test

5.3.13.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

null

Coding:	B1	B2
Hex	A0	00

The UICC is installed into the Terminal.

5.3.13.4.2 Procedure

- a) The UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.13.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{IMSI}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}

- 2) After step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format:	0
Home Network Identifier:	246/081
Routing indicator:	17
Protection scheme id:	00
Home network public key Id:	0
Scheme output:	357935793

5.3.14 SUCI calculation by ME using null scheme – no Home Network Public Key for supported protection scheme provisioned in the USIM

5.3.14.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, and the home network operator has not provisioned the Home Network Public Key for the protection scheme configured in the USIM that the ME supports, the ME shall calculate the SUCI using the null-scheme.

5.3.14.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure on EF_{SUCI_Calc_Info} and EF_{Routing_Indicator}.
- 3) The ME shall calculate the SUCI using the null-scheme if no Home Network Public Key configured in the USIM for the protection scheme configured in the USIM that the ME supports.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- TS 33.501 [41], clause 6.12.2, Annex C;
- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.3.14.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{IMSI} commands are performed correctly by the ME.
- 2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

5.3.14.4 Method of test

5.3.14.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile B

Key Index 1: 0

Coding:	B1	B2	B3	B4
Hex	A0	02	02	00

The UICC is installed into the Terminal.

5.3.14.4.2 Procedure

- The UE is switched on.
- The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.14.5 Acceptance criteria

- After step a) the ME shall read EF_{IMSI}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}
- After step b) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format:	0
Home Network Identifier:	246/081
Routing indicator:	17
Protection scheme id:	00
Home network public key Id:	0
Scheme output:	357935793

5.3.15 SUCI calculation by ME using null scheme with the E-UTRAN/EPC UICC

5.3.15.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision the Protection Scheme and public key in the USIM that the operator allows. But if the SUCI calculation indication is not present, the calculation is in the ME. If the Home Network Public Key or the priority list are not provisioned in the USIM, the ME shall calculate the SUCI using the null-scheme. The Routing Indicator shall be stored in the USIM. If the Routing Indicator is not present in the USIM, the ME shall set it to a default value 0.

5.3.15.2 Conformance requirement

- SUCI calculation procedure shall be performed by the ME if the SUCI calculation indication is not present in the USIM.
- The ME shall calculate the SUCI using the null-scheme if E-UTRAN/EPC UICC is installed into the ME.

Reference:

- TS 31.102 [4], clause Annex E;
- TS 33.501 [41], clause 5.2.5, 6.12.2, Annex C;
- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4, 9.11.3.4.

5.3.15.3 Test purpose

- 1) To verify that the ME performs the SUCI calculation procedure using null-scheme.

5.3.15.4 Method of test

5.3.15.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default E-UTRAN/EPC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

The UICC is installed into the Terminal.

5.3.15.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to NG-SS, Further NG-SS responds with REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and the UE is switched off.
- c) The UE is switched on.
- d) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- e) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.15.5 Acceptance criteria

- 1) After step c) the ME shall read EF_{IMSI}.
- 2) At step d) the UE shall include the SUCI as coded below in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format:	0
Home Network Identifier:	246/081
Routing indicator:	0
Protection scheme id:	00
Home network public key Id:	0

Scheme output: 357935793

5.3.16 SUCI calculation by ME using the lower priority protection scheme when the higher priority protection scheme is not supported by the ME

5.3.16.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM. If the higher priority protection scheme is not supported by the ME, the ME should use the lower priority protection scheme to calculate the SUCI.

5.3.16.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}.
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EF_{SUCI_Calc_Info}.
- 3) The ME shall select the protection scheme from its supported schemes that has the highest priority in the list are obtained from the USIM. If the higher priority protection scheme is not supported by the ME, the ME should use the lower priority protection scheme to calculate the SUCI.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- 3GPP TS 33.501 [41], clause 6.12.2, Annex C;
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.3.16.3 Test purpose

- 1) To verify that the READ EF_{Routing_Indicator}, EF_{SUCI_Calc_Info} and EF_{IMSI} commands are performed correctly by the ME.
- 2) To verify that if the higher priority protection scheme is not supported by the ME, the ME should use the lower priority protection scheme to calculate the SUCI.

5.3.16.4 Method of test

5.3.16.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The 5G-NR UICC is configured with the following parameters in the order of priority and installed into the ME.

EFSUCI_Calc_Info (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – any value of the reserved range (i.e 0x3 - 0xB) that is not standardized

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile A

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 16

Home Network Public Key 1: 2E 85 DA EC 6A C9 B5 2B 5D 2D 58 02 33 29 57 75 49 44 5A 39 3D 2A 68
E6 12 14 27 34 95 AD BE 65

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2: 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27
3B F8 E4 A6 F4 EE C0 A6 50

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	A0	06	Note1	01	01	02	00	00
	B9	B10	B11	B12	B13	B14	B15	B16
	A1	4A	80	01	10	81	20	2E
	B17	B18	B19	B20	B21	B22	B23	B24
	85	DA	EC	6A	C9	B5	2B	5D
	B25	B26	B27	B28	B29	B30	B31	B32
	2D	58	02	33	29	57	75	49
	B33	B34	B35	B36	B37	B38	B39	B40
	44	5A	39	3D	2A	68	E6	12
	B41	B42	B43	B44	B45	B46	B47	B48
	14	27	34	95	AD	BE	65	80
	B49	B50	B51	B52	B53	B54	B55	B56
	01	1E	81	20	5A	8D	38	86
	B57	B58	B59	B60	B61	B62	B63	B64
	48	20	19	7C	33	94	B9	26
	B65	B66	B67	B68	B69	B70	B71	B72
	13	B2	0B	91	63	3C	BD	89
	B73	B74	B75	B76	B77	B78	B79	B80
	71	19	27	3B	F8	E4	A6	F4
	B81	B82	B83	B84				
	EE	C0	A6	50				

NOTE1: Any value of the reserved range (i.e 0x3 - 0xB) that is not standardized (e.g. 0xB).

The NG-SS shall be configured with Home Network Private Key as following (for Profile A):

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	C5	3C	22	20	8B	61	86	0B
	B9	B10	B11	B12	B13	B14	B15	B16
	06	C6	2E	54	06	A7	B3	30
	B17	B18	B19	B20	B21	B22	B23	B24
	C2	B5	77	AA	55	58	98	15
	B25	B26	B27	B28	B29	B30	B31	B32
	10	D1	28	24	7D	38	BD	1D

5.3.16.4.2 Procedure

- a) The UE is switched on.

- b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.3.16.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{IMSI}, EF_{UST}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}.
- 2) After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format:	0
Home Network Identifier:	246/081
Routing indicator:	17
Protection scheme id:	01
Home network public key Id:	30
Scheme output:	ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.3.17 SUCI calculation by ME using Profile B with compressed Home Network Public Key

5.3.17.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

According to RFC 5480 [46] the ECC public key used with Profile B might have been calculated in compressed format.

5.3.17.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure with EF_{SUCI_Calc_Info}.
- 3) The ME shall calculate the SUCI using the highest priority supported protection scheme and the home network public key stored on the USIM
- 4) The ME shall be capable to calculate the SUCI using Profile B with the ECC public key provided in compressed format.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.8, 4.4.11.11, 5.3.47 and 5.3.51;
- 3GPP TS 33.501 [41], clause Annex C;
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4;
- RFC 5480 [46], clause 2.2.

5.3.17.3 Test purpose

- 1) To verify that the READ EF_{Routing_Indicator}, EF_{SUCI_Calc_Info} and EF_{IMSI} commands are performed correctly by the ME.
- 2) To verify that the ME performs the SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile B and the home network public key).

5.3.17.4 Method of test

5.3.17.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object:

Protection Scheme Identifier 1 – ECIES scheme profile B

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile A

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object:

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1 (see Note 1):

- 02 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	A0	06	02	01	01	02	00	00
	B9	B10	B11	B12	B13	B14	B15	B16
	A1	4B	80	01	1B	81	21	02
	B17	B18	B19	B20	B21	B22	B23	B24
	72	DA	71	97	62	34	CE	83
	B25	B26	B27	B28	B29	B30	B31	B32
	3A	69	07	42	58	67	B8	2E
	B33	B34	B35	B36	B37	B38	B39	B40
	07	4D	44	EF	90	7D	FB	4B
	B41	B42	B43	B44	B45	B46	B47	B48
	3E	21	C1	C2	25	6E	BC	D1

B49	B50	B51	B52	B53	B54	B55	B56
80	01	1E	81	20	5A	8D	38
B57	B58	B59	B60	B61	B62	B63	B64
86	48	20	19	7C	33	94	B9
B65	B66	B67	B68	B69	B70	B71	B72
26	13	B2	0B	91	63	3C	BD
B73	B74	B75	B76	B77	B78	B79	B80
89	71	19	27	3B	F8	E4	A6
B81	B82	B83	B84	B85			
F4	EE	C0	A6	50			

NOTE 1: EF_{SUCI_Calc_Info} contains the compressed form of the ECC public key for Profile B.

The UICC is installed into the ME.

The NG-SS shall be configured with Home Network Private Key as following:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	F1	AB	10	74	47	7E	BC	C7
	B9	B10	B11	B12	B13	B14	B15	B16
	F5	54	EA	1C	5F	C3	68	B1
	B17	B18	B19	B20	B21	B22	B23	B24
	61	67	30	15	5E	00	41	AC
	B25	B26	B27	B28	B29	B30	B31	B32
	44	7D	63	01	97	5F	EC	DA

5.3.17.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of *REGISTRATION ACCEPT* message with a new 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.3.17.5 Acceptance criteria

- After step a) the ME shall read EF_{IMSI}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}.
- After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 0

Home Network Identifier: 246/081

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.4 Unified Access Control information handling for 5G-NR

5.4.1 Unified Access Control – Access identity 0, no access identities indicated by USIM

5.4.1.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

If no Access Identities are configured in EF_{UAC_AIC} and in EF_{ACC} , Access Identity 0 is applicable. The UE shall read EF_{UAC_AIC} and EF_{ACC} as part of USIM Initialization procedure.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.1.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. The UE shall be able to determine whether or not a particular new access attempt is allowed based on $uac\_BarringInfo$ broadcast in SIB1. Access Control check shall be performed as per the information received in $uac\_BarringInfoSetList$.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

5.4.1.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.

5.4.1.4 Method of test

5.4.1.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

No Access Identities configured in **EF_{UAC_AIC}** and no Access Classes configured in **EF_{ACC}** as also shown in table 5.4.1-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

- User controlled PLMN selector available
- Fixed dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications available
- 5GS Mobility Management Information available
- 5G Security Parameters available
- Subscription identifier privacy support not available
- SUCI calculation by USIM not available
- UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.1-1, TAC="000001".
- CellIdentity: "000000001"

If present in the REGISTRATION ACCEPT, the 5GS network feature support IE indicates Access identity 1 as not valid and Access identity 2 as not valid.

For Table 5.4.1-1:

- uac-BarringInfo in SIB1 should be set as in the table:
- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.1.4.2 Procedure

Steps for the Table 5.4.1-1

- a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.
- b) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- c) The test is repeated for each set of values in the table.

5.4.1.4.3 Acceptance criteria

For the Table 5.4.1-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.1-1

TC Seq#	Access Category	USIM		SIB1		REGISTRATION ACCEPT (5GS network feature support IE)		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	Registration successful?	MO Data call successful?
1.1	7	0x00 00 00 00	0000 0	Not Present	246 / 081	0	0	Yes	Yes
1.2	3	0x00 00 00 00	0000 0	UAC_BarringInfo_Common(3,0 x0000000'B)	246 / 081	0	0	No	NA
1.3	3	0x00 00 00 00	0000 0	UAC_BarringInfo_PerPLMN(3,0 x0000000'B)	246 / 081	0	0	No	NA
1.4	3	0x00 00 00 00	0000 0	UAC_BarringInfo_PerPLMN(3,0 x1000000'B)	246 / 081	0	0	No	NA
1.5	7	0x00 00 00 00	0000 0	UAC_BarringInfo_Common(7,0 x0000000'B)	246 / 081	0	0	Yes	No
1.6	7	0x00 00 00 00	0000 0	UAC_BarringInfo_PerPLMN(7,0 x0000000'B)	246 / 081	0	0	Yes	No
1.7	3	0x00 00 00 00	0000 0	UAC_BarringInfo_Common2 (7,0x1000000'B, 3,0x0000000'B)	244 / 081	0	0	No	NA

5.4.1A Unified Access Control – Access identity 0, no access identities indicated by USIM, Access Category 8

5.4.1A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

If no Access Identities are configured in EF_{UAC_AIC} and in EF_{ACC}, Access Identity 0 is applicable. The UE shall read EF_{UAC_AIC} and EF_{ACC} as part of USIM Initialization procedure.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update, RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

5.4.1A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.
2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.
3. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.
4. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP 38.331 [44], clauses 5.3.13.2.

5.4.1A.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

5.4.1A.4 Method of test

5.4.1A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

No Access Identities configured in EF_{UAC_AIC} and no Access Classes configured in EF_{ACC} as also shown in table 5.4.1A-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
Fixed dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
Service n 33 (Packed Switched Domain) shall be set to '1'
Enabled Services Table available
EPS Mobility Management Information available
Allowed CSG Lists and corresponding indications available
5GS Mobility Management Information available
5G Security Parameters available
Subscription identifier privacy support not available
SUCI calculation by USIM not available
UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

- Transmits on the BCCH, with the following network parameters:
- TAI (MCC/MNC/TAC):MCC, MNC: see tables 5.4.1A-1, TAC="000001".
 - CellIdentity: "000000001"

If present in the REGISTRATION ACCEPT, the 5GS network feature support IE indicates Access identity 1 as not valid and Access identity 2 as not valid.

For Table 5.4.1A-1:

No uac-BarringInfo in SIB1.

Cell B:

- Transmits on the BCCH, with the following network parameters:
- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.1A-1, TAC="000001".
 - CellIdentity: "000000002"

If present in the REGISTRATION ACCEPT, the 5GS network feature support IE indicates Access identity 1 as not valid and Access identity 2 as not valid.

For Table 5.4.1A-1:

- uac-BarringInfo in SIB1 should be set as in the table:
- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.1A.4.2 Procedure

Steps for the Table 5.4.1A-1

- a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.
- b) Using the MMI or EMMI set up a successful MO Data call.
- c) NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).
 - *ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with *cellIdentity* of Cell A


```
cellList {
    plmn-Identity    {mcc, mnc}, -- see table 5.4.1A-1 for mcc/mnc
    ran-AreaCells    000000001'B
}
```
- d) Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:
 - Refer to Annex A for the Methods *UAC_BarringInfo_xxxxxx()* in the table.
- e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.
- f) The test is repeated for each set of values in the table.

5.4.1A.4.3 Acceptance criteria

For the Table 5.4.1A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.1A-1

TC Seq#	Access Category	USIM		SIB1		REGISTRATION ACCEPT (5GS network feature support IE)		Result
		EF _{UAC_AIC}	EF _{ACC} (Byte 1, b8-b4)	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	RRCResumeRequest with resumeCause set to rna-Update successful?
2.1	8	0x00 00 00 00	00000	Not Present	246 / 081	0	0	Yes
2.2	8	0x00 00 00 00	00000	UAC_BarringInfo_Common(8,0x0000000'B)	246 / 081	0	0	No
2.3	8	0x00 00 00 00	00000	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	0	0	No
2.4	8	0x00 00 00 00	00000	UAC_BarringInfo_Common2(7,0x1000000'B, 8,0x0000000'B)	244 / 081	0	0	No

5.4.2 Unified Access Control – Access Identity 1 – MPS indicated by USIM

5.4.2.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to access identity 1 allocated for high priority services MPS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.2.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 1 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.2.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.2.4 Method of test

5.4.2.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

Access Identity 1 (and in some test cases additional Access Identities) in **EF_{UAC_AIC}** is configured and no Access Classes are configured in **EF_{ACC}** as given in tables 5.4.2-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.2-1, TAC="000001".
- CellIdentity : "000000001"

For Table 5.4.2-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.2.4.2 Procedure

Steps for the Table 5.4.2-1

- NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.

- b) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- c) The test is repeated for each set of values in the table.

5.4.2.4.3 Acceptance criteria

For the Table 5.4.2-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.2-1

TC Seq#	Access Category	USIM		SIB1		REGISTRATION ACCEPT (5GS network feature support IE)		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	Registration successful?	MO Data call successful?
1.1	7	0x01 00 00 00	00000	Not Present	246 / 081	0	0	Yes	Yes
1.2	3	0x01 00 00 00	00000	UAC_BarringInfo_Common(3,0x1000000'B)	246 / 081	0	0	No	NA
1.3	3	0x01 00 00 00	00000	UAC_BarringInfo_PerPLMN(3,0x1000000'B)	246 / 081	0	0	No	NA
1.4	3	0x01 00 00 00	00000	UAC_BarringInfo_Common(3,0x1000000'B)	246 / 082	0	0	No	NA
1.5	3	0x01 00 00 00	00000	UAC_BarringInfo_Common(3,0x0100000'B)	246 / 081	0	0	Yes	Yes
1.6	3	0x03 00 00 00	00000	UAC_BarringInfo_Common(3,0x0100000'B)	246 / 081	0	0	Yes	Yes
1.7	7	0x01 00 00 00	00000	UAC_BarringInfo_Common(7,0x0000000'B)	246 / 081	0	0	Yes	Yes
1.8	3	0x01 00 00 00	00000	UAC_BarringInfo_Common(3,0x0000000'B)	244 / 081	0	0	No	NA
1.9	7	0x01 00 00 00	00000	UAC_BarringInfo_Common(7,0x1000000'B)	246 / 081	0	0	Yes	No
1.10	7	0x01 00 00 00	00000	UAC_BarringInfo_PerPLMN(7,0x1000000'B)	246 / 081	0	0	Yes	No
1.11	7	0x01 00 00 00	00000	UAC_BarringInfo_Common(7,0x1000000'B)	246 / 082	0	0	Yes	No
1.12	7	0x01 00 00 00	00000	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	0	0	Yes	No
1.13	7	0x01 00 00 00	00000	UAC_BarringInfo_Common(7,0x0100000'B)	244 / 081	1	0	Yes	Yes
1.14	7	0x02 00 00 00	00000	UAC_BarringInfo_Common(7,0x0100000'B)	244 / 081	1	0	Yes	Yes
1.15	7	0x01 00 00 00	00000	UAC_BarringInfo_Common2(3,0x0100000'B, 7,0x1000000'B)	246 / 081	0	0	Yes	No
1.16	3	0x01 00 00 00	00000	UAC_BarringInfo_Common2(7,0x1000000'B, 3,0x0000000'B)	244 / 081	0	0	No	NA

5.4.2A Unified Access Control – Access Identity 1 – MPS indicated by USIM, Access Category 8

5.4.2A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to access identity 1 allocated for high priority services MPS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

5.4.2A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 1 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2

5.4.2A.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.
- 4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

5.4.2A.4 Method of test

5.4.2A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and EF_{ACC}

Access Identity 1 (and in some test cases additional Access Identities) in EF_{UAC_AIC} is configured and no Access Classes are configured in EF_{ACC} as given in table 5.4.2A-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.2A-1, TAC="000001".
- CellIdentity : "000000001"

For Table 5.4.2A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.2A-1, TAC="000001".
- CellIdentity: "000000002"

For Table 5.4.2A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.2A.4.2 Procedure

Steps for the Table 5.4.2A-1

- a) NG-SS activates Cell A and terminal is switched on and performs successful Registration.
- b) Using the MMI or EMMI set up a successful MO Data call.
- c) NG-SS sends RRCRelease with suspendConfig in criticalExtensions (with the choice rrcRelease).
 - ran-NotificationAreaInfo in suspendConfig contains the cellList with cellIdentity of Cell A


```

cellList {
    plmn-Identity    {mcc, mnc}, -- see table 5.4.2A-1 for mcc/mnc
    ran-AreaCells    000000001'B
}
```
- d) Deactivate Cell A and activate Cell B with uac-BarringInfo in SIB1 set as in the table:
 - Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.
- e) UE attempts to initiate RRCResumeRequest procedure with resumeCause set to rna-Update.
- f) The test is repeated for each set of values in the table.

5.4.2A.4.3 Acceptance criteria

For the Table 5.4.2A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.2A-1

TC Seq#	Access Category	USIM		SIB1		REGISTRATION ACCEPT (5GS network feature support IE)		Result
		EF _{UAC_AIC}	EF _{ACC} (Byte 1, b8-b4)	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	RRCResumeRequest with resumeCause set to rna-Update successful?
2.1	8	0x01 00 00 00	00000	Not Present	246 / 081	0	0	Yes

2.2	8	0x01 00 00 00	00000	UAC_BarringInfo_Common(8,0x1000000'B)	246 / 081	0	0	No
2.3	8	0x01 00 00 00	00000	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	0	0	Yes
2.4	8	0x01 00 00 00	00000	UAC_BarringInfo_Common(8,0x1000000'B)	244 / 081	1	0	No
2.5	8	0x01 00 00 00	00000	UAC_BarringInfo_Common2(7,0x1000000'B, 8,0x0000000'B)	244 / 081	0	0	No
2.6	8	0x01 00 00 00	00000	UAC_BarringInfo_Common(8,0x0000000'B)	246 / 081	0	0	Yes
2.7	8	0x01 00 00 00	00000	UAC_BarringInfo_PerPLMN(8,0x1000000'B)	246 / 081	0	0	No

5.4.3 Unified Access Control – Access Identity 1 – no MPS indication by USIM and SUPI not changed

5.4.3.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid in RPLMN or equivalent PLMN".

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.3.2 Conformance requirement

1. The USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid in RPLMN or equivalent PLMN".

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. The MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

4. Access Identity 1 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

5. Upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid", the UE shall act as a UE with access identity 1 configured for MPS in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects a non-equivalent PLMN. Access identity 1 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.3.4

6. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.3.3 Test purpose

- 1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 1 and the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 1 for access barring.
- 2) To verify the MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME,
- 3) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 4) To verify that the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.
- 5) To verify that a UE operated with a USIM where the file EF_{UAC_AIC} does not indicate access identity 1, after a change of the REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

5.4.3.4 Method of test

5.4.3.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

No Access Identity is configured in EF_{UAC_AIC} and no Access Classes are configured in EF_{ACC} as given in table 5.4.3-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

- Logically:
- User controlled PLMN selector available
 - Fixed dialling numbers available
 - The GSM Access available
 - The Group Identifier level 1 and level 2 not available
 - Service n 33 (Packed Switched Domain) shall be set to '1'
 - Enabled Services Table available
 - EPS Mobility Management Information available
 - Allowed CSG Lists and corresponding indications available
 - 5GS Mobility Management Information available
 - 5G Security Parameters available
 - Subscription identifier privacy support not available
 - SUCI calculation by USIM not available
 - UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

- Cell A:
- Transmits on the BCCH, with the following network parameters:
 - TAI (MCC/MNC/TAC):246/081/000001.
 - CellIdentity: "000000001"

For Table 5.4.3-1:

After turning on the cell for the 2nd time, uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

- Cell B:
- Transmits on the BCCH, with the following network parameters:
 - TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.3-1, TAC: "000002".
 - CellIdentity: "000000002"

For Table 5.4.3-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.3.4.2 Procedure

Steps for the Table 5.4.3-1

- The NG-SS activates Cell A without uac-BarringInfo in SIB1, the ME is switched on (1st time) and sends a *REGISTRATION REQUEST* to Cell A.
- Cell A responds with a *REGISTRATION ACCEPT* message with the MPS indicator bit set to "Access identity 1 valid".
- The ME is switched off, the NG-SS deactivates Cell A.
- The NG-SS activates Cell A or B with SIB1 as specified in the table.
- The ME is switched on again (2nd time) using the same USIM and sends a *REGISTRATION REQUEST* to the cell activated in step d).
- The cell activated in step d) responds with a *REGISTRATION ACCEPT* message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.
- Using the MMI or EMMI a MO Data call is attempted if required by the test.
- The test is repeated for each set of values in the table.

5.4.3.4.3 Acceptance criteria

For the Table 5.4.3-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table.

Table 5.4.3-1

TC Seq#)	Access Category	USIM		SIB1 of Cell A or B after the 2 nd power up of the ME			REGISTRATION ACCEPT (5GS network feature support IE) on Cell A at 1 st power up of the ME		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Cell A or B	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	Registration successful?	MO Data call successful?
1.1	3	0x00 00 00 00	00000	Cell A	Not Present	246 / 081	1	0	Yes	Yes
1.2	3	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common (3,0x1000000'B)	246 / 081	1	0	No	N/A
1.3	7	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common (7,0x0100000'B)	246 / 081	1	0	Yes	No
1.4	3	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common (3,0x1000000'B)	246 / 081	1	0	Yes	Yes
1.5	3	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_PerPLMN (3,0x0100000'B)	246 / 082	1	0	No	N/A
1.6	3	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common (3,0x0000000'B)	244 / 081	1	0	No	N/A
1.7	7	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common (7,0x0100000'B)	244 / 081	1	0	Yes	No
1.8	7	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common (7,0x0100000'B)	244 / 081	1	1	Yes	No

5.4.4 Unified Access Control – Access Identity 1 – no MPS indication by USIM and SUPI is changed

5.4.4.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

The MPS indicator is stored together with a PLMN identity of the PLMN that provided it and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.4.2 Conformance requirement

1. When the UE is in the country of its HPLMN, and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 1, the UE uses the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 1 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 1 to be valid when the UE is not in the country of its HPLMN prior to receiving the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 1 valid" in RPLMN or equivalent PLMN.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. Upon receiving a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 valid" in RPLMN or equivalent PLMN, the UE shall act as a UE with access identity 1 configured for MPS in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid in RPLMN or equivalent PLMN" or until the UE selects a non-equivalent PLMN. Access identity 1 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4.

- 4- The MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MPS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

5. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.4.3 Test purpose

- 1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 1 and the MPS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 1 for access barring.
- 2) To verify that the MPS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid" or until the UE selects a non-equivalent PLMN.
- 3) To verify the MPS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MPS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME.
- 4) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 5) To verify that a UE operated with a USIM where the file EF_{UAC_AIC} does not indicate access identity 1, after a change of the REGISTRATION ACCEPT message with the MPS indicator bit set to "Access identity 1 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

5.4.4.4 Method of test

5.4.4.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

No Access Identity is configured in EF_{UAC_AIC} and no Access Classes are configured in EF_{ACC} as given in table 5.4.4-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{FUST} (USIM Service Table)

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/000001.
- CellIdentity: "000000001"

For Table 5.4.4-1:

After turning on the cell for the 2nd time, uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.4-1, TAC="000002".
- CellIdentity: "000000002"

For Table 5.4.4-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.4.4.2 Procedure

Steps for the Table 5.4.4-1

- NG-SS activates Cell A without uac-BarringInfo in SIB1, the ME is switched on (1st time) and sends a *REGISTRATION REQUEST* to Cell A.
- Cell A responds with a *REGISTRATION ACCEPT* message with the MPS indicator bit set to "Access identity 1 valid".
- The ME is switched off, The NG-SS deactivates Cell A.
- The NG-SS activates Cell A or B with SIB1 as specified in the table.

- e) The ME is switched on again (2nd time) with a different USIM (e.g.: IMSI set to 24681685533963) and sends a *REGISTRATION REQUEST* to the Cell in step d).
- f) Cell A or B (as specified in the table) responds with a *REGISTRATION ACCEPT* message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.
- g) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- h) The test is repeated for each set of values in the table.

5.4.4.4.3 Acceptance criteria

For the Table 5.4.4-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table

Table 5.4.4-1

TC Seq#)	Access Category	USIM		SIB1 of Cell A or B after the 2 nd power up of the ME			REGISTRATION ACCEPT (5GS network feature support IE) on Cell A at 1 st power up of the ME		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Cell A or B	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	Registration successful?	MO Data call successful?
1.1	3	0x00 00 00 00	00000	Cell A	Not Present	246 / 081	1	0	Yes	Yes
1.2	3	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common(3,0x0100000'B)	246 / 081	1	0	No	NA
1.3	7	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common(7,0x0100000'B)	246 / 081	1	0	Yes	No
1.4	3	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 081	1	0	No	NA
1.5	3	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common(3,0x0100000'B)	246 / 082	1	0	No	NA
1.6	3	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_PerPLMN(3,0x01000001'B)	244 / 081	1	0	No	NA
1.7	7	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	1	0	Yes	No

5.4.5 Unified Access Control – Access Identity 2 – MCS indicated by USIM

5.4.5.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to Access Identity 2 allocated for high priority services MCS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.5.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 2 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.5.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.5.4 Method of test

5.4.5.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and EF_{ACC}

Access Identity 2 (and in some test cases additional Access Identities) in EF_{UAC_AIC} is configured and no Access Classes are configured in EF_{ACC} as given in tables 5.4.5-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

- Logically:
- User controlled PLMN selector available
 - Fixed dialling numbers available
 - The GSM Access available
 - The Group Identifier level 1 and level 2 not available
 - Service n 33 (Packed Switched Domain) shall be set to '1'
 - Enabled Services Table available
 - EPS Mobility Management Information available
 - Allowed CSG Lists and corresponding indications available
 - 5GS Mobility Management Information available
 - 5G Security Parameters available
 - Subscription identifier privacy support not available
 - SUCI calculation by USIM not available
 - UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.5-1, TAC="000001".
- CellIdentity : "000000001"

For Table 5.4.5-1:

- uac-BarringInfo in SIB1 should be set as in the table:
- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.5.4.2 Procedure

Steps for the Table 5.4.5-1

- a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.
- b) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- c) The test is repeated for each set of values in the table.

5.4.5.4.3 Acceptance criteria

For the Table 5.4.5-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.5-1

TC Seq #	Access Category	USIM		SIB1		REGISTRATION ACCEPT (5GS network feature support IE)		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicat or Bit	MCS indicat or Bit	Registration successful?	MO Data call successful?
1.1	7	0x02 00 00 00	00000	Not Present	246 / 081	0	0	Yes	Yes
1.2	3	0x02 00 00 00	00000	UAC_BarringInfo_Common(3,0x0100000'B)	246 / 081	0	0	No	NA
1.3	3	0x02 00 00 00	00000	UAC_BarringInfo_PerPLMN(3,0x0100000'B)	246 / 081	0	0	No	NA
1.4	3	0x02 00 00 00	00000	UAC_BarringInfo_Common(3,0x0100000'B)	246 / 082	0	0	No	NA
1.5	3	0x02 00 00 00	00000	UAC_BarringInfo_Common(3,0x1000000'B)	246 / 081	0	0	Yes	Yes
1.6	3	0x03 00 00 00	00000	UAC_BarringInfo_Common(3,0x1000000'B)	246 / 081	0	0	Yes	Yes
1.7	7	0x02 00 00 00	00000	UAC_BarringInfo_Common(7,0x0000000'B)	246 / 081	0	0	Yes	Yes
1.8	3	0x02 00 00 00	00000	UAC_BarringInfo_Common(3,0x0000000'B)	244 / 081	0	0	No	NA
1.9	7	0x02 00 00 00	00000	UAC_BarringInfo_Common(7,0x0100000'B)	246 / 081	0	0	Yes	No
1.10	7	0x02 00 00 00	00000	UAC_BarringInfo_PerPLMN(7,0x0100000'B)	246 / 081	0	0	Yes	No
1.11	7	0x02 00 00 00	00000	UAC_BarringInfo_Common(7,0x0100000'B)	246 / 082	0	0	Yes	No
1.12	7	0x02 00 00 00	00000	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	0	0	Yes	No
1.13	7	0x02 00 00 00	00000	UAC_BarringInfo_Common(7,0x1000000'B)	244 / 081	0	1	Yes	Yes
1.14	7	0x01 00 00 00	00000	UAC_BarringInfo_Common(7,0x1000000'B)	244 / 081	0	1	Yes	Yes
1.15	7	0x02 00 00 00	00000	UAC_BarringInfo_Common2(3,0x1000000'B, 7,0x0100000'B)	246 / 081	0	0	Yes	No
1.16	3	0x02 00 00 00	00000	UAC_BarringInfo_Common2(7,0x0100000'B, 3,0x0000000'B)	244 / 081	0	0	No	NA

5.4.5A Unified Access Control – Access Identity 2 – MCS indicated by USIM

5.4.5A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to Access Identity 2 allocated for high priority services MCS.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

5.4.5A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Access Identity 2 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2

5.4.5A.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.
- 4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

5.4.5A.4 Method of test

5.4.5A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

Access Identity 2 (and in some test cases additional Access Identities) in **EF_{UAC_AIC}** is configured and no Access Classes are configured in **EF_{ACC}** as given in table 5.4.5A-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.5A-1, TAC="000001".
- CellIdentity : "000000001"

For Table 5.4.5A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.5A-1, TAC="000001".
- CellIdentity: "000000002"

For Table 5.4.5A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods *UAC_BarringInfo_xxxxxx()* in the table.

5.4.5A.4.2 Procedure

Steps for the Table 5.4.5A-1

- NG-SS activates Cell A and terminal is switched on and performs successful Registration.
- Using the MMI or EMMI set up a successful MO Data call.
- NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).
 - ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with *cellIdentity* of Cell A


```
cellList {
    plmn-Identity    {mcc, mnc}, -- see table 5.4.5A-1 for mcc/mnc
    ran-AreaCells    000000001'B
}
```
- Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:
 - Refer to Annex A for the Methods *UAC_BarringInfo_xxxxxx()* in the table.
- UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.
- The test is repeated for each set of values in the table.

5.4.5A.4.3 Acceptance criteria

For the Table 5.4.5A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.5A-1

TC Seq#	Access Category	USIM		SIB1		REGISTRATION ACCEPT (5GS network feature support IE)		Result
		EF _{UAC_AIC}	EF _{ACC} (Byte 1, b8-b4)	<i>uac-BarringInfo</i>	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	
2.1	8	0x02 00 00 00	00000	Not Present	246 / 081	0	0	Yes
2.2	8	0x02 00 00 00	00000	<i>UAC_BarringInfo_Common</i> (8,0x0100000'B)	246 / 081	0	0	No
2.3	8	0x02 00 00 00	00000	<i>UAC_BarringInfo_PerPLMN</i> (8,0x0000000'B)	246 / 081	0	0	Yes
2.4	8	0x02 00 00 00	00000	<i>UAC_BarringInfo_Common</i> (8,0x0100000'B)	244 / 081	0	1	No
2.5	8	0x02 00 00 00	00000	<i>UAC_BarringInfo_Common2</i> (7,0x0100000'B, 8,0x0000000'B)	244 / 081	0	0	No

5.4.6 Unified Access Control – Access Identity 2 – no MCS indication by USIM and SUPI is not changed

5.4.6.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the UE is in the country of its HPLMN or in an EHPLMN (if the EHPLMN list is present), and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid in RPLMN or equivalent PLMN".

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.6.2 Conformance requirement

1. The USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid in RPLMN or equivalent PLMN".

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

4. Access Identity 2 is valid if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

6. Upon receiving a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid", the UE shall act as a UE with access identity 2 configured for MCS in all NG-RAN of the registered PLMN and its equivalent PLMNs. The MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with

the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN. Access identity 2 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.3.4

6. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.6.3 Test purpose

- 1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 2 and the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 2 for access barring.
- 2) To verify the MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME,
- 3) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 4) To verify that the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.
- 5) To verify that a UE operated with a USIM where the file EF_{UAC_AIC} does not indicate access identity 2, after a change of the REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

5.4.6.4 Method of test

5.4.6.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and EF_{ACC}

No Access Identity is configured in EF_{UAC_AIC} and no Access Classes are configured in EF_{ACC} as given in tables 5.4.6-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081
- TAC: ="000001".
- CellIdentity: "000000001"

For Table 5.4.6-1:

After turning on the cell for the 2nd time, uac-BarringInfo in SIB1 should be set as in the table:

Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.6-1, TAC="000002".
- CellIdentity: "000000002"

For Table 5.4.6-1:

uac-BarringInfo in SIB1 should be set as in the table:

Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.6.4.2 Procedure

Steps for the Table 5.4.6-1

- NG-SS activates Cell A without uac-BarringInfo in SIB1, the ME is switched on (1st time) and sends a REGISTRATION REQUEST to Cell A.

- b) Cell A responds with a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid".
- c) The ME is switched off and turned off Cell A.
- d) Turn on Cell A or B with SIB1 as specified in the table.
- e) The ME is switched on again (2nd time) using the same USIM and sends a REGISTRATION REQUEST to the Cell in step d).
- f) Cell A or B (as specified in the table) responds with a REGISTRATION ACCEPT message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.
- g) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- h) The test is repeated for each set of values in the table.

5.4.6.4.3 Acceptance criteria

For the Table 5.4.6-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table.

Table 5.4.6-1

TC Seq #)	Access Category	USIM		SIB1 of Cell A or B after the 2 nd power up of the ME			REGISTRATION ACCEPT (5GS network feature support IE) on Cell A at 1 st power up of the ME		Result	
		EF _{UAC_AIC}	EF _{AC} C (Byte 1 b8-b4)	Cell A or B	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	Registration successful?	MO Data call successful?
1.1	3	0x00 00 00 00	0000 0	Cell A	Not Present	246 / 081	1	0	Yes	Yes
1.2	3	0x00 00 00 00	0000 0	Cell A	UAC_BarringInfo_Common(3,0x01000000'B)	246 / 081	0	1	No	NA
1.3	7	0x00 00 00 00	0000 0	Cell A	UAC_BarringInfo_Common(7,0x10000000'B)	246 / 081	0	1	Yes	No
1.4	3	0x00 00 00 00	0000 0	Cell A	UAC_BarringInfo_Common(3,0x10000000'B)	246 / 081	0	1	Yes	Yes
1.5	3	0x00 00 00 00	0000 0	Cell B	UAC_BarringInfo_Common(3,0x10000000'B)	246 / 082	0	1	No	NA
1.6	3	0x00 00 00 00	0000 0	Cell B	UAC_BarringInfo_PerPLMN(3,0x10000000'B)	244 / 081	0	1	No	NA
1.7	7	0x00 00 00 00	0000 0	Cell B	UAC_BarringInfo_Common(7,0x00000000'B)	244 / 081	0	1	Yes	No

5.4.7 Unified Access Control – Access Identity 2 – no MCS indication by USIM and SUPI is changed

5.4.7.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

When the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.7.2 Conformance requirement

1. When the UE is in the country of its HPLMN, and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 2, the UE uses the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message to determine if access identity 2 is valid.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

2. The UE shall not consider access identity 2 to be valid when the UE is not in the country of its HPLMN prior to receiving the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message being set to "Access identity 2 valid in RPLMN or equivalent PLMN".

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

3. The UE shall consider access identity 2 to be valid when the network informs the UE that the use of access identity 2 is valid in the RPLMN or equivalent PLMN by setting the MCS indicator bit of the 5GS network feature support IE to "Access identity 2 valid", in the REGISTRATION ACCEPT message, the UE shall act as a UE with access identity 2 configured for MCS in all NG-RAN of the registered PLMN and its equivalent PLMNs, until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN. Access identity 2 is only applicable while the UE is in N1 mode.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4.

4. The MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and is valid in that RPLMN or equivalent PLMN. The MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the MCS indicator.

Reference:

- 3GPP TS 24.501 [42], Annex C.

5. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.7.3 Test purpose

- 1) To verify if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country and the USIM file EF_{UAC_AIC} does not indicate the UE is configured for access identity 2 and the MCS indicator bit of the 5GS network feature support IE in the REGISTRATION ACCEPT message is received, UE considers access identity as 2 for access barring.
- 2) To verify that the MCS indicator bit in the 5GS network feature support IE provided in the REGISTRATION ACCEPT message is valid until the UE receives a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid" or until the UE selects a non-equivalent PLMN.
- 3) To verify the MCS indicator is stored together with a PLMN identity of the PLMN that provided it, and the MCS indicator can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME.
- 4) To verify that the UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 5) To verify that a UE operated with a USIM where the file EF_{UAC_AIC} does not indicate access identity 2, after a change of the REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 not valid", or when the UE has selected a non-equivalent PLMN, the UE is acting as if it is configured for access identity 0.

5.4.7.4 Method of test

5.4.7.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

No Access Identity is configured in EF_{UAC_AIC} and no Access Classes are configured in EF_{ACC} as given in table 5.4.7-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{FUST} (USIM Service Table)

Logically:

User controlled PLMN selector available

Fixed dialling numbers available

The GSM Access available

The Group Identifier level 1 and level 2 not available

Service n 33 (Packed Switched Domain) shall be set to '1'

Enabled Services Table available

EPS Mobility Management Information available

Allowed CSG Lists and corresponding indications available

5GS Mobility Management Information available

5G Security Parameters available

Subscription identifier privacy support not available

SUCI calculation by USIM not available

UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/000001
- CellIdentity: "000000001"

For Table 5.4.7-1:

After turning on the cell for the 2nd time, uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): MCC, MNC: see table 5.4.7-1, TAC="000002".
- CellIdentity: "000000002"

For Table 5.4.7-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.7.4.2 Procedure

Steps for the Table 5.4.7-1

- NG-SS activates Cell A without uac-BarringInfo in SIB1, the UE is switched on (1st time) and sends a REGISTRATION REQUEST to Cell A.
- Cell A responds with a REGISTRATION ACCEPT message with the MCS indicator bit set to "Access identity 2 valid".
- The UE is switched off and Cell A is turned off.
- Turn on Cell A or B with SIB1 as specified in the table.

- e) The UE is switched on again (2nd time) with a different USIM (e.g.: IMSI set to 24681685533963) and sends a REGISTRATION REQUEST to the Cell in step d).
- f) Cell A or B (as specified in the table) responds with a REGISTRATION ACCEPT message with MPS and MCS indicator bits set to zero in 5GS network feature support IE.
- g) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- h) The test is repeated for each set of values in the table.

5.4.7.4.3 Acceptance criteria

For the Table 5.4.7-1

- After step e) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step g) the UE shall make a successful or not successful MO data call in accordance with the result indicated in the table.

Table 5.4.7-1

TC Seq#	Access Category	USIM		SIB1 of Cell A or B after the 2 nd power up of the ME			REGISTRATION ACCEPT (5GS network feature support IE) on Cell A at 1 st power up of the ME		Result (after 2 nd power up)	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Cell A or B	uac-BarringInfo	PLMN-Identity (MCC/MNC)	MPS indicator Bit	MCS indicator Bit	Registration successful?	MO Data call successful?
1.1	3	0x00 00 00 00	00000	Cell A	Not Present	246 / 081	0	1	Yes	Yes
1.2	3	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common(3,0x1000000'B)	246 / 081	0	1	No	NA
1.3	7	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common(7,0x1000000'B)	246 / 081	0	1	Yes	No
1.4	3	0x00 00 00 00	00000	Cell A	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 081	0	1	No	NA
1.5	3	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common(3,0x1000000'B)	246 / 082	0	1	No	NA
1.6	3	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_PerPLMN(3,0x1000000'B)	244 / 081	0	1	No	NA
1.7	7	0x00 00 00 00	00000	Cell B	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	0	1	Yes	No

5.4.8 Unified Access Control – Access Identities 11 and 15 indicated by USIM

5.4.8.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{ACC} in the USIM contains the configuration information pertaining to access identities 11 and 15.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.8.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.
2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.
3. Access Identity 11 and 15 are valid in HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.
4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

5.4.8.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.8.4 Method of test

5.4.8.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and EF_{ACC}

Access Identities 11 and 15 are configured in EF_{ACC} and no Access Identities are configured in EF_{UAC_AIC} as given in tables 5.4.8-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
Fixed dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
Service n 33 (Packed Switched Domain) shall be set to '1'
Enabled Services Table available
EPS Mobility Management Information available
Allowed CSG Lists and corresponding indications available
5GS Mobility Management Information available
5G Security Parameters available
Subscription identifier privacy support not available
SUCI calculation by USIM not available
UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

- Transmits on the BCCH, with the following network parameters:
- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.8-1, TAC="000001".
 - CellIdentity: "000000001"

For Table 5.4.8-1:

- uac-BarringInfo in SIB1 should be set as in the table:
- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.8.4.2 Procedure

Steps for the Table 5.4.8-1

- a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.
- b) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- c) The test is repeated for each set of values in the table.

5.4.8.4.3 Acceptance criteria

For the Table 5.4.8-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.

- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.8-1

TC Seq#	Access Category	USIM			SIB1		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Access Identities	uac-BarringInfo	PLMN-Identity (MCC/MNC)	Registration successful?	MO Data call successful?
1.1	7	0x00 00 00 00	00001	11	Not Present	246 / 081	Yes	Yes
1.2	3	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(3,0x0010000'B)	246 / 081	No	NA
1.3	3	0x00 00 00 00	00001	11	UAC_BarringInfo_PerPLMN(3,0x0010000'B)	246 / 081	No	NA
1.4	3	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 082	No	NA
1.5	3	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(3,0x0001000'B)	246 / 081	Yes	Yes
1.6	3	0x00 00 00 00	10001	11, 15	UAC_BarringInfo_Common(3,0x0000001'B)	246 / 081	Yes	Yes
1.7	7	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(7,0x0010000'B)	246 / 081	Yes	No
1.8	7	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(7,0x0000000'B)	246 / 082	Yes	No
1.9	7	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	Yes	No
1.10	7	0x00 00 00 00	00001	11	UAC_BarringInfo_Common2(3,0x0001000'B, 7,0x0010000'B)	246 / 081	Yes	No
1.11	3	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(3,0x0000001'B)	246 / 081	No	NA
1.12	3	0x00 00 00 00	10000	15	UAC_BarringInfo_PerPLMN(3,0x0000001'B)	246 / 081	No	NA
1.13	3	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 082	No	NA
1.14	3	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(3,0x0010000'B)	246 / 081	Yes	Yes
1.15	7	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(7,0x0000001'B)	246 / 081	Yes	No
1.16	7	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(7,0x0000000'B)	246 / 082	Yes	No
1.17	7	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	Yes	No
1.18	7	0x00 00 00 00	10000	15	UAC_BarringInfo_Common2(3,0x0001000'B, 7,0x0000001'B)	246 / 081	Yes	No

5.4.8A Unified Access Control – Access Identities 11 and 15 indicated by USIM, Access Category 8

5.4.8A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{ACC} in the USIM contains the configuration information pertaining to access identities 11 and 15.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

5.4.8A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.
2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.
3. Access Identity 11 and 15 are valid in HPLMN (if the EHPLMN list is not present or is empty) or EHPLMN (if the EHPLMN list is present).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.
4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.
5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2.

5.4.8A.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.
- 4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

5.4.8A.4 Method of test

5.4.8A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

Access Identities 11 and 15 are configured in EF_{ACC} and no Access Identities are configured in EF_{UAC_AIC} as given in table 5.4.8A-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.8A-1, TAC="000001".
- CellIdentity: "000000001"

For Table 5.4.8A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.8A-1, TAC="000001".
- CellIdentity: "000000002"

For Table 5.4.8A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_XXXXXX() in the table.

5.4.8A.4.2 Procedure

Steps for the Table 5.4.8A-1

- NG-SS activates Cell A and terminal is switched on and performs successful Registration.
- Using the MMI or EMMI set up a successful MO Data call.
- NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).
 - *ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with cellIdentity of Cell A


```
cellList {
    plmn-Identity    {mcc, mnc}, -- see table 5.4.8A-1 for mcc/mnc
    ran-AreaCells  000000001'B
}
```
- Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:
 - Refer to Annex A for the Methods UAC_BarringInfo_XXXXXX() in the table.
- UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.
- The test is repeated for each set of values in the table.

5.4.8A.4.3 Acceptance criteria

For the Table 5.4.8A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.8A-1

TC Seq#	Access Category	USIM			SIB1		Result
		EF _{UAC_AIC}	EF _{ACC} (Byte 1, b8-b4)	Access identity	uac-BarringInfo	PLMN-Identity (MCC/MNC)	RRCResumeRequest with resumeCause set to rna-Update successful?
2.1	8	0x00 00 00 00	00001	11	Not Present	246 / 081	Yes
2.2	8	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(8,0x0010000'B)	246 / 081	No
2.3	8	0x00 00 00 00	00001	11	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	Yes
2.4	8	0x00 00 00 00	00001	11	UAC_BarringInfo_Common(8,0x0000000'B)	246 / 082	No
2.5	8	0x00 00 00 00	00001	11	UAC_BarringInfo_Common2(7,0x0000001'B, 8,0x0000000'B)	244 / 081	No
2.6	8	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(8,0x0000001'B)	246 / 081	No
2.7	8	0x00 00 00 00	10000	15	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	Yes
2.8	8	0x00 00 00 00	10000	15	UAC_BarringInfo_Common(8,0x0000000'B)	246 / 082	No

2.9	8	0x00 00 00 00	10000	15	UAC_BarringInfo_Common2(7,0x00000001'B, 8,0x00000000'B)	244 / 081	No

5.4.9 Unified Access Control – Access Identities 12, 13 and 14 indicated by USIM

5.4.9.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{ACC} in the USIM contains the configuration information pertaining to access identities 12, 13 and 14.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

5.4.9.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.

3. Access Identities 12, 13 and 14 are valid in HPLMN and visited PLMNs of home country only.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.

4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.

5.4.9.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.9.4
Method of test

5.4.9.4.1
Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and EF_{ACC}

Access Identities 12, 13 and 14 are configured in EF_{ACC} and no Access Identities are configured in EF_{UAC_AIC} as given in tables 5.4.9-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
Fixed dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
Service n 33 (Packed Switched Domain) shall be set to '1'
Enabled Services Table available
EPS Mobility Management Information available
Allowed CSG Lists and corresponding indications available
5GS Mobility Management Information available
5G Security Parameters available
Subscription identifier privacy support not available
SUCI calculation by USIM not available
UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.9-1, TAC="000001".
- CellIdentity : "000000001"

For Table 5.4.9-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.9.4.2 Procedure

Steps for the Table 5.4.9-1

- a) NG-SS activates Cell A and terminal is switched on and performs Registration if access is allowed according to the table.
- b) Using the MMI or EMMI a MO Data call is attempted if required by the test.
- c) The test is repeated for each set of values in the table.

5.4.9.4.3 Acceptance criteria

For the Table 5.4.9-1

- After step a) the UE shall make a successful or not successful Registration to the network in accordance with the result indicated in the table.
- After step b) the UE shall make a successful or not successful MO Data call in accordance with the result indicated in the table if the step is applicable.

Table 5.4.9-1

TC Seq#	Access Category	USIM			SIB1		Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Access Identity	uac-BarringInfo	PLMN-Identity (MCC/MNC)	Registration successful?	MO Data call successful?
1.1	7	0x00 00 00 00	00010	12	Not Present	246 / 081	Yes	Yes
1.2	3	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(3,0x0001000'B)	246 / 081	No	NA
1.3	3	0x00 00 00 00	00010	12	UAC_BarringInfo_PerPLMN(3,0x0001000'B)	246 / 081	No	NA
1.4	3	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 082	Yes	Yes
1.5	3	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(3,0x0001000'B)	246 / 082	No	NA
1.6	3	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(3,0x0000000'B)	244 / 081	No	NA
1.7	3	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(3,0x0000100'B)	246 / 081	Yes	Yes
1.8	3	0x00 00 00 00	01110	12,13,14	UAC_BarringInfo_Common(3,0x0000110'B)	246 / 081	Yes	Yes
1.9	7	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(7,0x0001000'B)	246 / 081	Yes	No
1.10	7	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(7,0x0000000'B)	246 / 082	Yes	Yes
1.11	7	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	Yes	No
1.12	7	0x00 00 00 00	00010	12	UAC_BarringInfo_Common2 (3,0x0000100'B, 7,0x0001000'B)	246 / 081	Yes	No
1.13	3	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(3,0x0000100'B)	246 / 081	No	NA
1.14	3	0x00 00 00 00	00100	13	UAC_BarringInfo_PerPLMN(3,0x0000100'B)	246 / 081	No	NA
1.15	3	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 082	Yes	Yes
1.16	3	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(3,0x0000100'B)	246 / 082	No	NA

1.17	3	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(3,0x0000010'B)	246 / 082	Yes	Yes
1.18	7	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(7,0x0000100'B)	246 / 081	Yes	No
1.19	7	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	Yes	No
1.20	7	0x00 00 00 00	00100	13	UAC_BarringInfo_Common2(3,0x0000010'B, 7,0x0000100'B)	246 / 081	Yes	No
1.21	3	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(3,0x0000010'B)	246 / 081	No	NA
1.22	3	0x00 00 00 00	01000	14	UAC_BarringInfo_PerPLMN(3,0x0000010'B)	246 / 081	No	NA
1.23	3	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(3,0x0000000'B)	246 / 082	Yes	Yes
1.24	3	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(3,0x0000010'B)	246 / 082	No	NA
1.25	3	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(3,0x0001100'B)	246 / 082	Yes	Yes
1.26	7	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(7,0x0000010'B)	246 / 081	Yes	No
1.27	7	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(7,0x0000000'B)	244 / 081	Yes	No
1.28	7	0x00 00 00 00	01000	14	UAC_BarringInfo_Common2(3,0x0000100'B, 7,0x0000010'B)	246 / 081	Yes	No

5.4.9A Unified Access Control – Access Identities 12, 13 and 14 indicated by USIM, Access Category 8

5.4.9A.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information (i.e. a list of barring parameters associated with an Access Identity and an Access Category) in SIB1.

The EF_{ACC} in the USIM contains the configuration information pertaining to access identities 12, 13 and 14.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

If RRC state is RRC_INACTIVE and the resumption of the RRC connection is triggered due to an RNA Update RRC layer shall select Access Category as 8 and perform unified access control procedure in case there is no ongoing emergency service.

5.4.9A.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM-Terminal initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1. One or more Access Identities and only one Access Category are selected and tested for an access attempt.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2.
3. Access Identities 12, 13 and 14 are valid in HPLMN and visited PLMNs of home country only.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2.
4. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14.
5. If the resumption of the RRC connection is triggered due to an RNA update and there is no ongoing emergency service RRC shall select '8' as the Access Category and perform the unified access control procedure.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.13.2.

5.4.9A.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.

- 2) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 3) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.
- 4) To verify UE performs unified access control procedure if RNA Update procedure is triggered.

5.4.9A.4 Method of test

5.4.9A.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

Access Identities 12, 13 and 14 are configured in EF_{ACC} and no Access Identities are configured in EF_{UAC_AIC} as given in table 5.4.9-2.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{FUST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x			

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.9A-1, TAC="000001".
- CellIdentity : "000000001"

For Table 5.4.9A-1:

No uac-BarringInfo in SIB1.

Cell B:

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see table 5.4.9A-1, TAC="000001".
- CellIdentity: "000000002"

For Table 5.4.9A-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

5.4.9A.4.2 Procedure

Steps for the Table 5.4.9A-1

- NG-SS activates Cell A and terminal is switched on and performs successful Registration.
- Using the MMI or EMMI set up a successful MO Data call.
- NG-SS sends *RRCRelease* with *suspendConfig* in *criticalExtensions* (with the choice *rrcRelease*).
 - *ran-NotificationAreaInfo* in *suspendConfig* contains the *cellList* with cellIdentity of Cell A

```
cellList {
  plmn-Identity    {mcc, mnc}, -- see table 5.4.9A-1 for mcc/mnc
  ran-AreaCells    000000001'B
}
```

- Deactivate Cell A and activate Cell B with *uac-BarringInfo* in SIB1 set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.
- e) UE attempts to initiate *RRCResumeRequest* procedure with *resumeCause* set to *rna-Update*.
- f) The test is repeated for each set of values in the table.

5.4.9A.4.3 Acceptance criteria

For the Table 5.4.9A-1

- After step e) the UE shall make a successful or not successful RRC Resumption for RNA Update in accordance with the result indicated in the table.

Table 5.4.9A-1

TC Seq#	Access Category	USIM			SIB1		Result
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Access Identity	uac-BarringInfo	PLMN-Identity (MCC/MNC)	RRCResumeRequest with resumeCause set to rna-Update successful?
2.1	8	0x00 00 00 00	00010	12	Not Present	246 / 081	Yes
2.2	8	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(8,0x0001000'B)	246 / 081	No
2.3	8	0x00 00 00 00	00010	12	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	Yes
2.4	8	0x00 00 00 00	00010	12	UAC_BarringInfo_Common(8,0x0010000'B)	246 / 082	Yes
2.5	8	0x00 00 00 00	00010	12	UAC_BarringInfo_Common2 (7,0x0010000'B, 8,0x0000000'B)	244 / 081	No
2.6	8	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(8,0x0000100'B)	246 / 081	No
2.7	8	0x00 00 00 00	00100	13	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	Yes
2.8	8	0x00 00 00 00	00100	13	UAC_BarringInfo_Common(8,0x0000100'B)	246 / 082	No
2.9	8	0x00 00 00 00	00100	13	UAC_BarringInfo_Common2 (7,0x0001000'B, 8,0x0000000'B)	244 / 081	No
2.10	8	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(8,0x0000010'B)	246 / 081	No
2.11	8	0x00 00 00 00	01000	14	UAC_BarringInfo_PerPLMN(8,0x0000000'B)	246 / 081	Yes
2.12	8	0x00 00 00 00	01000	14	UAC_BarringInfo_Common(8,0x0000010'B)	246 / 082	No
2.13	8	0x00 00 00 00	01000	14	UAC_BarringInfo_Common2 (7,0x0000100'B, 8,0x0000000'B)	244 / 081	No

5.4.10 Unified Access Control – Operator-Defined Access Category

5.4.10.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information a list of barring parameters associated with an Access Identity and an Access Category in SIB1. Access category numbers in the 32-63 range are used for operator-defined Access Categories.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to access identities allocated for high priority services that can be used by the subscriber.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

When the NAS detects an access event, the NAS shall perform the mapping of the kind of request to one or more access identities and one access category and lower layers will perform access barring checks for that request based on the determined access identities and access category.

Operator-defined access category definitions can be signaled to the UE using NAS signaling. Each operator-defined access category definition consists of the parameters a precedence value, an operator-defined access category number, one or more access category criteria type and optionally, a standardized access category.

When the UE needs to initiate an access attempt that triggers access barring check, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

In order to determine the access category applicable for the access attempt, the NAS shall check the Access category mapping rules, and use the access category of the lowest rule number for which there is a match for barring check. In the case of operator-defined access categories, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value.

5.4.10.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in Table 6.22.2.3-1.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Operator may provide one or more PLMN-specific Operator-defined access category definitions to the UE using NAS signaling (Operator-defined access category definitions information element), and the UE handles the Operator-defined access category definitions stored for the Registered PLMN, as specified in TS 24.501.

References:

- 3GPP TS 23.501 [49], clause 5.2.5
- 3GPP TS 24.501 [42] clause 9.11.3.38

4. When the UE needs to initiate an access attempt in one of the events listed in clause 4.5.1, the UE shall determine one or more access identities from the set of standardized access identities, and one access category from the set of standardized access categories and operator-defined access categories, to be associated with that access attempt.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

5. An access attempt matches the criteria of an operator-defined access category definition, if the access attempt matches all access category criteria types included in the criteria with any of the associated access criteria type values.

Reference:

- 3GPP TS 24.501 [42], clause 4.5.3

6. In order to determine the access category applicable for the access attempt, the NAS shall check the rules in table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see clause 4.5.3).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

7. If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4

8. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.10.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM initialisation procedure, and subsequently adopts this value.
- 2) To verify if UE uses operator-defined access categories received within Operator-defined access category definitions information element in the REGISTRATION ACCEPT.
- 3) To verify the UE checks the access category applicable for the access attempt, as per the Access category mapping rules and chooses the matching lowest rule.
- 4) To verify the UE checks operator-defined access category parameters precedence value, operator-defined access category number and access category criteria type associated with the Operator-defined Access Category when determining the Access Category for the access attempt.
- 5) To verify UE stops using the operator-defined access category definitions stored for the previously selected PLMN.
- 6) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 7) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.10.4 Method of test

5.4.10.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and **EF_{ACC}**

Access Identities are configured in EF_{UAC_AIC} and Access Classes are configured in EF_{ACC} as given in Table 5.4.10-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

- User controlled PLMN selector available
- Fixed dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications available
- 5GS Mobility Management Information available
- 5G Security Parameters available
- Subscription identifier privacy support not available
- SUCI calculation by USIM not available
- UAC Access Identities support available
- Support for URSP by USIM not available

Coding:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x	xxxx 0xxx		

ME shall be configured with following URSP rules:

Rule Precedence = 1

- Traffic Descriptor:
 - DNN=TestGp.rs1
- Route Selection Descriptor:
 - Precedence = 1
 - Network Slice Selection, S-NSSAI: '01 01 01 01' (ST: MBB, SD: '010101')
 - SSC Mode Selection: SSC Mode 1
 - Access Type preference: 3GPP access

Rule Precedence = 2

- Traffic Descriptor:
 - DNN = TestGp.rs2
- Route Selection Descriptor:
 - Precedence = 1
 - Network Slice Selection, S-NSSAI: '01 01 01 02' (ST: MBB, SD: '010102')
 - SSC Mode Selection: SSC Mode 1

Rule Precedence = 3

- Traffic Descriptor:
 - DNN = TestGp.rs3
- Route Selection Descriptor:
 - Precedence = 1
 - Network Slice Selection, S-NSSAI: '01 01 01 02' (ST: MBB, SD: '010102')
 - SSC Mode Selection: SSC Mode 1

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081
- TAC: "000001".
- CellIdentity: "000000001"

For Table 5.4.10-1:

After turning on the cell for the 2nd time, uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the table.

REGISTRATION ACCEPT IEIs.

- Operator-Defined Access Category Definitions IEI is configured as defined in Table 5.4.10-1
- Refer to Annex A tables A4-A5 for Methods ODAC_definitions1() and ODAC_definitions2().
- For HPLMN Cells: Allowed S-NSSAI IEI is configured to include S-NSSAIs '01 01 01 01', '01 01 01 02' and '01 01 01 03'.

For VPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs ('01 01 01 01', '01 01 01 01'), ('01 01 01 02', '01 01 01 02'), and ('01 01 01 03', '01 01 01 03').

5.4.10.4.2 Procedure

Steps for the Table 5.4.10-1

- a) NG-SS activates Cell A with uac-BarringInfo in SIB1 as in the table, the ME is switched on with the UICC and sends a *REGISTRATION REQUEST* to Cell A.
- b) Cell A responds with a *REGISTRATION ACCEPT* message with the Operator-Defined Access Category Definitions IEI as defined in the Table.
- c) Attempt 1st MO Data call to DNN TestGp.rs1/S-NSSAI '01 01 01 01' using the MMI or EMMI.
- d) For sequences 1.1 – 1.14:

Attempt 2nd MO Data call to DNN TestGp.rs2/S-NSSAI '01 01 01 02' using the MMI or EMMI.

For sequences 1.15 – 1.17:

Attempt 2nd MO Data call to DNN TestGp.rs3/S-NSSAI '01 01 01 02' using the MMI or EMMI
- e) The test is repeated for each set of values in the table.

5.4.10.5 Acceptance criteria

For the Table 5.4.10-1

- The UE shall make a successful or not successful 1st MO data call in accordance with the result indicated in the table.
- The UE shall make a successful or not successful 2nd MO data call in accordance with the result indicated in the table.

able 5.4.10-1

		USIM	SIB1 of Cell A	REGISTRATION ACCEPT	Result

TC Seq #	Access Category for Call 1&2	EF _{UAC_AIC}	EF _{AC} C (Byte 1 b8-b4)	uac-BarringInfo	PLMN-Identity (MCC/MNC)	(Operator-defined access category definitions IE)	MO Data call 1 successful ?	MO Data call 2 successful ?
1.1	32,7	0x00 00 00 00	0000 0	Not Present	246 / 081	ODAC_definitions1(0)	Yes	Yes
1.2	32,7	0x00 00 00 00	0000 0	UAC_BarringInfo_Common (32,0x0000000'B)	246 / 081	ODAC_definitions1(0)	No	Yes
1.3	50,7	0x00 00 00 00	0000 0	UAC_BarringInfo_Common (50,0x0100000'B)	246 / 081	ODAC_definitions1(18)	No	Yes
1.4	63,7	0x01 00 00 00	0000 0	UAC_BarringInfo_Common (7,0x1000000'B)	246 / 082	ODAC_definitions1(31)	Yes	No
1.5	63,7	0x02 00 00 00	0000 0	UAC_BarringInfo_Common (63,0x0100000'B)	246 / 081	ODAC_definitions1(31)	No	Yes
1.6	48,7	0x01 00 00 00	0000 0	UAC_BarringInfo_Common2 (7,0x1000000'B, 48,0x1000000'B)	246 / 082	ODAC_definitions1(16)	No	No
1.7	48,7	0x02 00 00 00	0000 0	UAC_BarringInfo_Common (48,0x1000000'B)	246 / 082	ODAC_definitions1(16)	Yes	Yes
1.8	50,7	0x02 00 00 00	0000 0	UAC_BarringInfo_PerPLMN (50,0x1100000'B)	244 / 081	ODAC_definitions1(18)	No	Yes
1.9	50,7	0x00 00 00 00	0000 1	UAC_BarringInfo_Common (50,0x0001000'B)	244 / 081	ODAC_definitions1(18)	No	Yes
1.10	33,7	0x02 00 00 00	0000 0	UAC_BarringInfo_Common2 (33,0x0100000'B, 7,0x1000000'B)	246 / 082	ODAC_definitions1(1)	No	Yes
1.11	34,7	0x01 00 00 00	0000 0	UAC_BarringInfo_Common2 (7,0x1000000'B, 34,0x0100000'B)	246 / 082	ODAC_definitions1(2)	Yes	No
1.12	7,34	0x01 00 00 00	0000 0	UAC_BarringInfo_Common2 (32,0x1000000'B, 34,0x0100000'B)	246 / 081	ODAC_definitions2(2,0)	Yes	Yes
1.13	7,32	0x00 00 00 00	0100 0	UAC_BarringInfo_Common2 (32,0x0000000'B, 34,0x0000010'B)	246 / 082	ODAC_definitions2(0,2)	Yes	Yes
1.14	7,48	0x00 00 00 00	0010 0	UAC_BarringInfo_Common2 (48,0x0100000'B, 7,0x0000100'B)	246 / 082	ODAC_definitions2(16, 31)	No	Yes
1.15	7,32	0x01 00 00 00	0000 0	UAC_BarringInfo_Common2 (32,0x1000000'B, 34,0x0100000'B)	246 / 081	ODAC_definitions2(2,0)	Yes	No
1.16	7,34	0x00 00 00 00	0100 0	UAC_BarringInfo_Common2 (32,0x0000000'B, 34,0x0000010'B)	246 / 082	ODAC_definitions2(0,2)	Yes	No

1.17	7,63	0x00 00 00 00	0010 0	UAC_BarringInfo_Commo n2 (48,0x0100000'B, 7,0x0000100'B)	246 / 082	ODAC_definitions2(16, 31)	No	Yes

5.4.11 Unified Access Control – Operator-Defined Access Categories, no change in SUPI

5.4.11.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information a list of barring parameters associated with an Access Identity and an Access Category in SIB1. Access category numbers in the 32-63 range are used for operator-defined Access Categories.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to access identities allocated for high priority services that can be used by the subscriber.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

Operator-defined access category definitions can be signalled to the UE using NAS signalling. Each operator-defined access category definition consists of the parameters: a precedence value, an operator-defined access category number, one or more access category criteria type and optionally, a standardized access category.

Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

In order to determine the access category applicable for the access attempt, the NAS shall check the Access category mapping rules, and use the access category of the lowest rule number for which there is a match for barring check. In the case of operator-defined access categories, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value.

5.4.11.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Operator may provide one or more PLMN-specific Operator-defined access category definitions to the UE using NAS signalling (Operator-defined access category definitions information element), and the UE handles the Operator-defined access category definitions stored for the Registered PLMN, as specified in 3GPP TS 24.501.

References:

- 3GPP TS 23.501 [49], clause 5.2.5

- 3GPP TS 24.501 [42] clause 9.11.3.38

4. Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

Reference:

- 3GPP TS 24.501 [42], Annex C

5. In order to determine the access category applicable for the access attempt, the NAS shall check the rules in 3GPP TS 24.501 [42] Table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see 3GPP TS 24.501 [42] clause 4.5.3).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2

6. If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4

7. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.11.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify if UE uses operator-defined access categories received within Operator-defined access category definitions information element in the REGISTRATION ACCEPT.
- 3) To verify the UE checks the access category applicable for the access attempt, as per the Access category mapping rules and chooses the matching lowest rule.
- 4) To verify the UE checks operator-defined access category parameters precedence value, operator-defined access category number and access category criteria type associated with the Operator-defined Access Category when determining the Access Category for the access attempt.
- 5) To verify the Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN.

- 6) To verify the Operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.
- 7) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 8) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.11.4 Method of test

5.4.11.4.1 Initial conditions

The default 5G-NR UICC is used with the following exceptions:

EF_{UAC_AIC} and EF_{ACC}

Access Identity is configured in EF_{UAC_AIC} and no Access Classes are configured in EF_{ACC} as given in Table 5.4.11-1.

EF_{IMSI} (IMSI)

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support available
 Support for URSP by USIM not available

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x	xxxx 0xxx		

ME shall be configured with following URSP rules.

Rule Precedence =1
 Traffic Descriptor:
 DNN=TestGp.rs1
 Route Selection Descriptor:
 Precedence=1
 Network Slice Selection, S-NSSAI: '01 01 01 01' (ST: MBB, SD: '010101')
 SSC Mode Selection: SSC Mode 1
 Access Type preference: 3GPP access

Rule Precedence = 2

Traffic Descriptor:

DNN=TestGp.rs2

Route Selection Descriptor:

Precedence =1

Network Slice Selection, S-NSSAI: 01 01 01 02 (ST: MBB, SD: 010102)

SSC Mode Selection: SSC Mode 1

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081
- TAC: "000001"
- CellIdentity: "000000001"

For Table 5.4.11-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_XXXXXX() in the tables A1-A3.

Cell B:

NOTE: This cell is not required for the sequences in Table 5.4.11-1.

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see Table 5.4.11-1, TAC="000002".
- CellIdentity: "000000002"

For Table 5.4.11-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_XXXXXX() in the tables A1-A3.

REGISTRATION ACCEPT IEIs.

- Operator-Defined Access Category Definitions IEI is configured as defined in Table 5.4.11-1.
- Refer to Annex A tables A4-A5 for Methods ODAC_definitions1() and ODAC_definitions2()

For HPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs '01 01 01 01', '01 01 01 02' and '01 01 01 03'.

For VPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs ('01 01 01 01', '01 01 01 01'), ('01 01 01 02', '01 01 01 02'), and ('01 01 01 03', '01 01 01 03').

5.4.11.4.2 Procedure

For the Table 5.4.11-1

- a) NG-SS activates Cell A with uac-BarringInfo in SIB1 as in the table, the ME is switched on with the UICC and sends the 1st *REGISTRATION REQUEST* to Cell A.
- b) Cell A responds with a *REGISTRATION ACCEPT* message with the Operator-Defined Access Category Definitions IEI as defined in the Table.

If the Cell 2 in the table is Cell A,

- c) Remove the UICC.
- d) Reinsert the same UICC.
- e) ME sends the 2nd *REGISTRATION REQUEST* to Cell A and NG-SS sends the 2nd *REGISTRATION ACCEPT*.

If the Cell 2 in the table is Cell B,

- c) Remove the UICC and deactivate the Cell A.
- d) Re-insert the same UICC and activate Cell B.
- e) ME sends the 2nd *REGISTRATION REQUEST* to Cell B and NG-SS sends the 2nd *REGISTRATION ACCEPT*.
- f) Attempt 1st MO Data call to DNN TestGp.rs1/S-NSSAI '01 01 01 01' using the MMI or EMMI.
- g) Attempt 2nd MO Data call to DNN TestGp.rs2/S-NSSAI '01 01 01 02' using the MMI or EMMI.

5.4.11.4.3 Acceptance criteria

For the Table 5.4.11-1

- The UE shall make a successful or not successful 1st MO data call in accordance with the result indicated in the table.
- The UE shall make a successful or not successful 2nd MO data call in accordance with the result indicated in the table.

Table 5.4.11-1

TC Seq #	Access Category for Call 1&2	USIM		Cell 2		SIB 1: uac-BarringInfo (for all the Cells)	Operator-defined access category definitions IEI in	Result	
		EF _{UAC_AIC}	EF _A CC (Byte 1 b8-b4)	Cell Id of	PLMN-Identity (MCC/MNC)		1 st :REGISTRATION ACCEPT 2 nd :REGISTRATION ACCEPT	MO Data call 1 successful?	MO Data call 2 successful?
1.1	7,33	0x00 00 00 00	000 00	Cell A	246 / 081	Not Present	ODAC_definitions1(0) ODAC_definitions2(1,16)	Yes	Yes
1.2	7,33	0x00 00 00 00	000 00	Cell A	246 / 081	UAC_BarringInfo_Common(33,0x0000000'B)	ODAC_definitions1(0) ODAC_definitions2(1,16)	Yes	No
1.3	34,7	0x01 00 00 00	000 00	Cell A	246 / 081	UAC_BarringInfo_Common2 (34,0x1000000'B, 50,0x1000000'B)	ODAC_definitions2(18,1) ODAC_definitions1(2)	No	Yes
1.4	7,63	0x01 00 00 00	000 00	Cell B	244 / 081	UAC_BarringInfo_Common2 (63,0x0000000'B, 7,0x0100000'B)	ODAC_definitions1(3) ODAC_definitions2(31,18)	No	No
1.5	63,7	0x02 00 00 00	000 00	Cell A	246 / 081	UAC_BarringInfo_Common(63,0x0100000'B)	ODAC_definitions1(31) ODAC - Not present	No	Yes

1.6	7,7	0x00 00 00 00	100 00	Ce ll B	246 / 082	UAC_BarringInfo_Co mmon(48,0x0010000'B)	ODAC_definitions1(16) ODAC - Not present	Yes	Yes
1.7	7,7	0x00 00 00 00	001 00	Ce ll B	246 / 082	UAC_BarringInfo_Co mmon2 (32,0x0000100'B, 34,0x0000100'B)	ODAC_definitions2(0,2) ODAC - Empty	Yes	Yes

5.4.12 Unified Access Control – Operator-Defined Access Categories, SUPI change

5.4.12.1 Definition and applicability

The purpose of Unified Access Control procedure is to perform access barring check for a 5GS access attempt associated with a given Access Category and one or more Access Identities upon request from upper layers or the RRC layer.

The 5G network shall be able to broadcast barring control information a list of barring parameters associated with an Access Identity and an Access Category in SIB1. Access category numbers in the 32-63 range are used for operator-defined Access Categories.

The EF_{UAC_AIC} in the USIM contains the configuration information pertaining to access identities allocated for high priority services that can be used by the subscriber.

The UE shall be able to determine whether or not a particular new access attempt is allowed based on barring parameters that the UE receives from the broadcast barring control information and the configuration in the USIM.

Operator-defined access category definitions can be signaled to the UE using NAS signaling. Each operator-defined access category definition consists of the parameters a precedence value, an operator-defined access category number, one or more access category criteria type and optionally, a standardized access category.

Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

In order to determine the access category applicable for the access attempt, the NAS shall check the Access category mapping rules, and use the access category of the lowest rule number for which there is a match for barring check. In the case of operator-defined access categories, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value.

5.4.12.2 Conformance requirement

1. The Terminal shall read the access control value as part of the USIM initialization procedure, and subsequently adopt this value.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.1.2.

2. Access Identities are configured at the UE as listed in 3GPP TS 22.261 [43] Table 6.22.2.2-1. Access Categories are defined by the combination of conditions related to UE and the type of access attempt as listed in 3GPP TS 22.261 [43] Table 6.22.2.3-1.

Reference:

- 3GPP TS 22.261 [43], clause 6.22.2

3. Operator may provide one or more PLMN-specific Operator-defined access category definitions to the UE using NAS signalling (Operator-defined access category definitions information element), and the UE handles the Operator-defined access category definitions stored for the Registered PLMN, as specified in 3GPP TS 24.501.

References:

- 3GPP TS 23.501 [49], clause 5.2.5
 - 3GPP TS 24.501 [42] clause 9.11.3.38
4. Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN. The operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.

Reference:

- 3GPP TS 24.501 [42], Annex C
5. In order to determine the access category applicable for the access attempt, the NAS shall check the rules in 3GPP TS 24.501 [42] Table 4.5.2.2, and use the access category for which there is a match for barring check. If the access attempt matches more than one rule, the access category of the lowest rule number shall be selected. If the access attempt matches more than one operator-defined access category definition, the UE shall select the access category from the operator-defined access category definition with the lowest precedence value (see 3GPP TS 24.501 [42] clause 4.5.3).

Reference:

- 3GPP TS 24.501 [42], clause 4.5.2
6. If the UE receives Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains one or more operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN and shall store the received operator-defined access category definitions for the RPLMN. If the UE receives the Operator-defined access category definitions IE in the REGISTRATION ACCEPT message and the Operator-defined access category definitions IE contains no operator-defined access category definitions, the UE shall delete any operator-defined access category definitions stored for the RPLMN. If the REGISTRATION ACCEPT message does not contain the Operator-defined access category definitions IE, the UE shall not delete the operator-defined access category definitions stored for the RPLMN.

Reference:

- 3GPP TS 24.501 [42], clause 5.5.1.2.4
7. The UE shall be able to determine whether or not a particular new access attempt is allowed based on uac-BarringInfo broadcast in SIB1. Access Control check shall be performed as per the information received in uac-BarringInfoSetList.

Reference:

- 3GPP TS 38.331 [44], clauses 5.3.14

5.4.12.3 Test purpose

- 1) To verify that the Terminal reads the access control value from EF_{UAC_AIC} and EF_{ACC} as part of the USIM-Terminal initialisation procedure, and subsequently adopts this value.
- 2) To verify if UE uses operator-defined access categories received within Operator-defined access category definitions information element in the REGISTRATION ACCEPT.
- 3) To verify the UE checks the access category applicable for the access attempt, as per the Access category mapping rules and chooses the matching lowest rule.
- 4) To verify the UE checks operator-defined access category parameters precedence value, operator-defined access category number and access category criteria type associated with the Operator-defined Access Category when determining the Access Category for the access attempt.
- 5) To verify the Operator-defined access category definitions are stored together with a PLMN identity of the PLMN that provided them, and is valid in that PLMN or equivalent PLMN.

- 6) To verify the Operator-defined access category definitions can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME, else the UE shall delete the operator-defined access category definitions.
- 7) To verify UE maps the kind of request to one or more access identities and one access category and lower layers performs access barring checks for that request based on the determined access identities and access category.
- 8) To verify the UE determines whether or not a particular access attempt is allowed based on uac-BarringInfo broadcast in SIB1 and if the RPLMN is the HPLMN, EHPLMN or visited PLMN of the home country.

5.4.12.4 Method of test

5.4.12.4.1 Initial conditions

Both UICC 1 and UICC 2 are configured as the default 5G-NR UICC with the following exceptions:

EF_{IMSI} (IMSI)

UICC 1:

Logically: 246081357935793

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	39

UICC 2:

Logically: 246081357935799

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	31	75	39	75	99

EF_{UAC_AIC} and EF_{ACC}

Access Identity is configured in EF_{UAC_AIC} and no Access Classes are configured in EF_{ACC} as given in Table 5.4.12-1.

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 Subscription identifier privacy support not available
 SUCI calculation by USIM not available
 UAC Access Identities support available
 Support for URSP by USIM not available

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xx10 011x	xxxx 0xxx		

ME shall be configured with following URSP rules.

Rule Precedence =1
 Traffic Descriptor:
 DNN=TestGp.rs1
 Route Selection Descriptor:
 Precedence=1
 Network Slice Selection, S-NSSAI: '01 01 01 01' (ST: MBB, SD: '010101')
 SSC Mode Selection: SSC Mode 1
 Access Type preference: 3GPP access

Rule Precedence = 2
 Traffic Descriptor:
 DNN=TestGp.rs2
 Route Selection Descriptor:
 Precedence =1
 Network Slice Selection, S-NSSAI: '01 01 01 02' (ST: MBB, SD: '010102')
 SSC Mode Selection: SSC Mode 1

NETWORK (NG-SS)

Cell A:

Transmits on the BCCH, with the following network parameters:

- MCC, MNC: 246/081
- TAC: "000001"
- CellIdentity: "000000001"

For Table 5.4.12-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the tables A1-A3.

Cell B:

This cell is required for some sequences as in the Table 5.4.12-1.

Transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):MCC, MNC: see Table 5.4.12-1, TAC="000002".
- CellIdentity: "000000002"

For Table 5.4.12-1:

uac-BarringInfo in SIB1 should be set as in the table:

- Refer to Annex A for the Methods UAC_BarringInfo_xxxxxx() in the tables A1-A3.

REGISTRATION ACCEPT IEIs.

- Operator-Defined Access Category Definitions IEI is configured as defined in Table 5.4.12-1.
- Refer to Annex A tables A4-A5 for Methods ODAC_definitions1() and ODAC_definitions2().

For HPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs '01 01 01 01', '01 01 01 02' and '01 01 01 03'.

For VPLMN Cells:

- Allowed S-NSSAI IEI is configured to include S-NSSAIs ('01 01 01 01', '01 01 01 01'), ('01 01 01 02', '01 01 01 02'), and ('01 01 01 03', '01 01 01 03').

5.4.12.4.2 Procedure

For the Table 5.4.12-1

a) NG-SS activates Cell A with uac-BarringInfo in SIB1 as in the table, the ME is switched on with the UICC 1 and sends the 1st *REGISTRATION REQUEST* to Cell A.

b) Cell A responds with a *REGISTRATION ACCEPT* message with the Operator-Defined Access Category Definitions IEI as defined in the Table.

If the Cell 2 in the table is Cell A,

c) Remove the UICC 1 from the ME.

d) Insert the UICC 2.

e) ME sends the 2nd *REGISTRATION REQUEST* to Cell A and NG-SS sends the 2nd *REGISTRATION ACCEPT*.

If the Cell 2 in the table is Cell B,

c) Remove the UICC 1 from the ME and deactivate the Cell A.

d) Insert the UICC 2 and activate Cell B.

e) ME sends the 2nd *REGISTRATION REQUEST* to Cell B and NG-SS sends the 2nd *REGISTRATION ACCEPT*.

f) Attempt 1st MO Data call to DNN TestGp.rs1/S-NSSAI '01 01 01 01' using the MMI or EMMI.

g) Attempt 2nd MO Data call to DNN TestGp.rs2/S-NSSAI '01 01 01 02' using the MMI or EMMI.

5.4.12.4.3 Acceptance criteria

For the Table 5.4.12-1

- The UE shall make a successful or not successful 1st MO data call in accordance with the result indicated in the table.
- The UE shall make a successful or not successful 2nd MO data call in accordance with the result indicated in the table.

Table 5.4.12-1

TC Seq #	Access Category for Call 1 & 2	USIM		Cell 2		SIB 1: uac-BarringInfo (for all the Cells)	Operator-defined access category definitions IEI in	Result	
		EF _{UAC_AIC}	EF _{ACC} (Byte 1 b8-b4)	Cell Id of	PLMN-Identity (MCC/MNC)		1 st : REGISTRATION ACCEPT 2 nd : REGISTRATION ACCEPT	MO Data call 1 successful?	MO Data call 2 successful?
1.1	7,33	0x00 00 00 00	000 00	Cell A	246 / 081	Not Present	ODAC_definitions1(0) ODAC_definitions2(1,16)	Yes	Yes
1.2	7,33	0x00 00 00 00	000 00	Cell A	246 / 081	UAC_BarringInfo_Common(33,0x0000000'B)	ODAC_definitions1(0) ODAC_definitions2(1,16)	Yes	No
1.3	34,7	0x01 00 00 00	000 00	Cell A	246 / 081	UAC_BarringInfo_Common2 (34,0x1000000'B, 50,0x1000000'B)	ODAC_definitions2(18,1) ODAC_definitions1(2)	No	Yes

1.4	7,63	0x01 00 00 00	000 00	Ce II B	244 / 081	UAC_BarringInfo_Co mmon2 (63,0x0000000'B, 7,0x0100000'B)	ODAC_definitions1(3) ODAC_definitions2(31,18)	No	No
1.5	7,7	0x02 00 00 00	000 00	Ce II A	246 / 081	UAC_BarringInfo_Co mmon(63,0x0100000'B)	ODAC_definitions1(31) ODAC - Not present	Yes	Yes
1.6	7,7	0x00 00 00 00	100 00	Ce II B	246 / 082	UAC_BarringInfo_Co mmon(48,0x0010000'B)	ODAC_definitions1(16) ODAC - Not present	Yes	Yes
1.7	7,7	0x00 00 00 00	001 00	Ce II B	246 / 082	UAC_BarringInfo_Co mmon2 (32,0x0000100'B, 34,0x0000100'B)	ODAC_definitions2(0,2) ODAC - Empty	Yes	Yes
1.8	7,7	0x00 00 00 00	001 00	Ce II B	246 / 082	UAC_BarringInfo_Co mmon2 (50,0x0000100'B, 33,0x0000100'B)	ODAC_definitions2(18,1) ODAC - Not present	Yes	Yes

5.5 Handling of operator controlled features

5.5.1 Display of registered 5G PLMN name from USIM

5.5.1.1 Definition and applicability

If the operator's decision, as indicated by the USIM, is that the ME shall use EF_{OPL5G} in association with EF_{PNN} or EF_{PNNI} to display the Operator 5G PLMN name from USIM, then the ME shall be able to associate the prioritised list of Tracking Area Identity (TAI) identities for NG-RAN in EF_{OPL5G} with the the operator name contained in EF_{PNN}. This prioritized list takes precedence over any network name stored within the ME's internal list and any network name received when registered to the PLMN, as defined by TS 24.501 [42].

5.5.1.2 Conformance requirement

- 1) EF_{OPL5G} association with the EF_{PNN} shall be performed by the USIM if service n°129 is "available" in EF_{UST}.
- 2) The ME shall display the correct Operator network name per 4.4.11.9 in TS 31.102 [4].

Reference:

- TS 31.102 [4], clauses 4.4.11.9.
- TS 24.008 [16], clause 10.5.3.5a

5.5.1.3 Test purpose

- 1) To verify that ME displays the 5G Operator PLMN name correctly for the following cases.
 - a) Entire range of TAC for a specific PLMN is configured in EF_{OPL5G}.
 - b) Specific range of TAC for a specific PLMN is configured in EF_{OPL5G}.
 - c) Specific TAC for a specific PLMN is configured in EF_{OPL5G}.

5.5.1.4 Method of tests

5.5.1.4.1 Initial conditions

The default 5G-NR UICC is used (with the following additions) and the UICC is installed into the Terminal.

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 Operator Controlled PLMN selector with Access Technology available
 PLMN Network Name is available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 5GS Operator PLMN List available

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxx1 xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	Xxxx x11x	xxxx xxx1		

5G-NR UICC is configured with:

EF_{OPLMNwACT}

Logically:

1st PLMN: 244 010 (MCC MNC)
 1st ACT: NG-RAN
 2nd PLMN: 244 020 (MCC MNC)
 2nd ACT: NG-RAN
 3rd PLMN: 244 030 (MCC MNC)
 3rd ACT: NG-RAN
 4th PLMN: 244 040 (MCC MNC)
 4th ACT: NG-RAN
 5th PLMN: 244 050 (MCC MNC)
 5th ACT: NG-RAN
 6th PLMN: 244 060 (MCC MNC)
 6th ACT: NG-RAN
 7th PLMN: 244 070 (MCC MNC)
 7th ACT: NG-RAN
 8th PLMN: 244 080 (MCC MNC)
 8th ACT: NG-RAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Hex	42	04	10	08	00	42	04	20	08	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	42	04	30	08	00	42	04	40	08	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	04	50	08	00	42	04	60	08	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	42	04	70	08	00	42	04	80	08	00

EF_{OPL5G}

Record 1:

Logically: MCC: 244, MNC: 010, TAC: Entire range, PNN Record Identifier: 01

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	42	04	10	00	00	00	FF	FF
	B9	B10						
	FE	01						

Record 2:

Logically: MCC: 244, MNC: 020, TAC: 000003 - 000006, PNN Record Identifier: 02

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	42	04	20	00	00	03	00	00
	B9	B10						
	06	02						

Record 3:

Logically: MCC: 244, MNC: 030, TAC: 000003, PNN Record Identifier: 02

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	42	04	30	00	00	03	00	00
	B9	B10						
	03	02						

EF_{PNN}

Record 1:

Logically: Long name: PLMN 5G

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	43	08	87	50	66	D3	09	AA
	B9	B10	B11	B12	B13	B14	B15	B16
	1D	01	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20				
	FF	FF	FF	FF				

Record 2:

Logically: Long name: ABCD

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	43	05	84	41	E1	90	08	FF
	B9	B10	B11	B12	B13	B14	B15	B16
	FF	FF	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20				
	FF	FF	FF	FF				

Record 3:

Logically: Long name: CCCDDD

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	43	07	86	C3	E1	90	48	24
	B9	B10	B11	B12	B13	B14	B15	B16
	02	FF	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20				
	FF	FF	FF	FF				

5.5.1.4.2 Procedure

- NG-SS is powered up with TAI (MCC/MNC/TAC): 244/010/000001, and Access Control: unrestricted.
- The UE is switched on.
- The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.
- The UE sends REGISTRATION COMPLETE to NG-SS.
- Wait for 30 seconds.

- g) UE is switched off, and then NG-SS is powered down.
- h) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/020/000004, and Access Control: unrestricted.
- i) The UE is switched on.
- j) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI".
- k) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.
- l) The UE sends REGISTRATION COMPLETE to NG-SS.
- m) Wait for 30 seconds.
- n) UE is switched off, and then NG-SS is powered down.
- o) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/030/000003, and Access Control: unrestricted.
- p) The UE is switched on.
- q) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI".
- r) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.
- s) The UE sends REGISTRATION COMPLETE to NG-SS.
- t) Wait for 30 seconds.
- u) UE is switched off, and then NG-SS is powered down.

5.5.1.4.3 Acceptance criteria

- 1) After step f, ME shall display "PLMN 5G" as Operator 5G PLMN name.
- 2) After step m, ME shall display "ABCD" as Operator 5G PLMN name.
- 3) After step t, ME shall display "ABCD" as Operator 5G PLMN name.

5.5.2 Display of registered 5G PLMN name from ME

5.5.2.1 Definition and applicability

If the operator's decision, as indicated by the USIM, is that the ME shall use EF_{OPL5G} in association with EF_{PNN} or EF_{PNNI} to display the Operator 5G PLMN name from ME or other sources, then the displayed network name will be either from the one stored within the ME's internal list or any network name received when registered to the PLMN, as defined by TS 24.501 [42].

5.5.2.2 Conformance requirement

- 1) EF_{OPL5G} association with the EF_{PNN} shall be performed by the USIM if service n°129 is "available" in EF_{UST} .
- 2) The ME shall display the correct Operator network name per 4.4.11.9 in TS 31.102 [4].

Reference:

- TS 31.102 [4], clause 4.4.11.9.
- TS 24.008 [16], clause 10.5.3.5a.

5.5.2.3 Test purpose

- 1) To verify that ME displays the 5G Operator PLMN name correctly for the following cases.

- a) ME registers to a TAI outside the range referenced in EF_{OPL5G}.
- b) ME registers to a TAI configured in EF_{OPL5G} and PNN record identified is set as 00.

5.5.2.4 Method of tests

5.5.2.4.1 Initial conditions

The default 5G-NR UICC is used (with the following additions) and the UICC is installed into the Terminal.

EF_{UST} (USIM Service Table)

Logically:

User controlled PLMN selector available
 Fixed dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 Operator Controlled PLMN selector with Access Technology available
 PLMN Network Name is available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications available
 5GS Mobility Management Information available
 5G Security Parameters available
 5GS Operator PLMN List available

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxx1 xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	Xxxx x11x	xxxx xxx1		

5G-NR UICC is configured with:

EF_{OPLMNwACT}

Logically: 1st PLMN: 244 010 (MCC MNC)
 1st ACT: NG-RAN
 2nd PLMN: 244 020 (MCC MNC)
 2nd ACT: NG-RAN
 3rd PLMN: 244 030 (MCC MNC)
 3rd ACT: NG-RAN
 4th PLMN: 244 040 (MCC MNC)
 4th ACT: NG-RAN
 5th PLMN: 244 050 (MCC MNC)
 5th ACT: NG-RAN
 6th PLMN: 244 060 (MCC MNC)
 6th ACT: NG-RAN
 7th PLMN: 244 070 (MCC MNC)
 7th ACT: NG-RAN
 8th PLMN: 244 080 (MCC MNC)
 8th ACT: NG-RAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Hex	42	04	10	08	00	42	04	20	08	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	42	04	30	08	00	42	04	40	08	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	04	50	08	00	42	04	60	08	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40

	42	04	70	08	00	42	04	80	08	00

EF_{OPL5G}

Record 1:

Logically: MCC: 244, MNC: 010, TAC: Entire range, PNN Record Identifier: 01

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	42	04	10	00	00	00	FF	FF
	B9	B10						
	FE	01						

Record 2:

Logically: MCC: 244, MNC: 020, TAC: 000003 - 000006, PNN Record Identifier: 02

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	42	04	20	00	00	03	00	00
	B9	B10						
	06	02						

Record 3:

Logically: MCC: 244, MNC: 030, TAC: 000005 - 000009, PNN Record Identifier: 00

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	42	04	30	00	00	05	00	00
	B9	B10						
	09	00						

EF_{PNN}

Record 1:

Logically: Long name: PLMN 5G

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	43	08	87	50	66	D3	09	AA
	B9	B10	B11	B12	B13	B14	B15	B16
	1D	01	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20				
	FF	FF	FF	FF				

Record 2:

Logically: Long name: ABCD

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	43	05	84	41	E1	90	08	FF
	B9	B10	B11	B12	B13	B14	B15	B16
	FF	FF	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20				
	FF	FF	FF	FF				

Record 3:

Logically: Long name: CCCDDD

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	43	07	86	C3	E1	90	48	24
	B9	B10	B11	B12	B13	B14	B15	B16
	02	FF	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20				
	FF	FF	FF	FF				

5.5.2.4.2 Procedure

- a) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/020/000007, and Access Control: unrestricted.

- b) The UE is switched on.
- c) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- d) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.
- e) The UE sends REGISTRATION COMPLETE to NG-SS.
- f) Wait for 30 seconds.
- g) UE is switched off, and then NG-SS is powered down.
- h) NG-SS is powered up with TAI (MCC/MNC/TAC): 244/030/000006, and Access Control: unrestricted.
- i) The UE is switched on.
- j) The UE sends REGISTRATION REQUEST to the NG-SS, indicates the registration type IE as "initial registration" and 5GS mobile identity information element type "5G-GUTI".
- k) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.
- l) The UE sends REGISTRATION COMPLETE to NG-SS.
- m) Wait for 30 seconds.
- n) UE is switched off, and then NG-SS is powered down.

5.5.2.4.3 Acceptance criteria

- 1) After step f):
 - the ME shall not display the PNN: "ABCD" stored on the USIM;
 - the ME displays the registered MCC: "244" and MNC: "020".
- 2) After step m):
 - the ME shall not display the PNN: "PLMN 5G", "ABCD" or "CCCCDD";
 - the ME displays the registered MCC: "244" and MNC: "030".

NOTE: MCC/MNC combinations are displayed as formatted by the ME manufacturer. MCC/MNC combinations with correct values are valid, independent from the formatting (e.g. with or without a separator). Different from the MCC/MNC combinations anything else configured by ME as Operator 5G PLMN name may be displayed.

5.6 Handling subscription identifier privacy for 5G - SUPI type in NAI format

5.6.1 SUCI calculation by ME using null scheme

5.6.1.1 Definition and applicability

If the operator's decision is that ME shall calculate the SUCI, the home network operator shall provision a list of the Protection Scheme Identifiers in the USIM that the operator allows. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in the order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

The ME shall calculate the SUCI using the null-scheme if the highest priority of the protection schemes listed in the USIM is the null-scheme.

5.6.1.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) SUPI is available in EF_{SUPI_NAI} if Service n°130 is "available" in EF_{UST}
- 3) A subscriber identifier is in the form of a SUPI in NAI format
- 4) The SUPI may contain:
 - a network-specific identifier, used for private networks as defined in TS 22.261 [43] or
 - a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or
 - a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].
- 5) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EF_{SUCI_Calc_Info}.
- 6) The ME shall calculate the SUCI using the null-scheme if highest priority of the protection schemes listed in the USIM is the null-scheme.

Reference:

- TS 31.102 [4], clauses 4.4.11.8, 4.4.11.10, 4.4.11.11, 5.2.33, 5.3.47 and 5.3.51;
- TS 33.501 [41], clause Annex C;
- TS 23.003 [19], clause 28.2, 28.7.2.
- TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.6.1.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{SUPI_NAI} commands are performed correctly by the ME.
- 2) To verify that the ME performs the SUCI calculation procedure using null-scheme.

5.6.1.4 Method of test

5.6.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC non-IMSI SUPI Type is used with the following exception:

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – null-scheme

Key Index 1: 0

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 1

Protection Scheme Identifier 3 – ECIES scheme profile A

Key Index 3: 2

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 27

Home Network Public Key 1:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

Home Network Public Key 2 Identifier: 30

Home Network Public Key 2:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	A0	06	00	00	02	01	01	02
	B9	B10	B11	B12	B13	B14	B15	B16
	A1	6B	80	01	1B	81	41	04
	B17	B18	B19	B20	B21	B22	B23	B24
	72	DA	71	97	62	34	CE	83
	B25	B26	B27	B28	B29	B30	B31	B32
	3A	69	07	42	58	67	B8	2E
	B33	B34	B35	B36	B37	B38	B39	B40
	07	4D	44	EF	90	7D	FB	4B
	B41	B42	B43	B44	B45	B46	B47	B48
	3E	21	C1	C2	25	6E	BC	D1
	B49	B50	B51	B52	B53	B54	B55	B56
	5A	7D	ED	52	FC	BB	09	7A
	B57	B58	B59	B60	B61	B62	B63	B64
	4E	D2	50	E0	36	C7	B9	C8
	B65	B66	B67	B68	B69	B70	B71	B72
	C7	00	4C	4E	ED	C4	F0	68
	B73	B74	B75	B76	B77	B78	B79	B80
	CD	7B	F8	D3	F9	00	E3	B4
	B81	B82	B83	B84	B85	B86	B87	B88
	80	01	1E	81	20	5A	8D	38
	B89	B90	B91	B92	B93	B94	B95	B96
	86	48	20	19	7C	33	94	B9
	B97	B98	B99	B100	B101	B102	B103	B104
	26	13	B2	0B	91	63	3C	BD
	B105	B106	B107	B108	B109	B110	B111	B112
	89	71	19	27	3B	F8	E4	A6
	B113	B114	B115	B116	B117			
	F4	EE	C0	A6	50			

The UICC is installed into the ME.

5.6.1.4.2 Procedure

- a) The UE is switched on.
- b) The UE sends REGISTRATION REQUEST to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- c) Upon reception of REGISTRATION ACCEPT message with a 5G-GUTI, the UE sends REGISTRATION COMPLETE message to the NG-SS.

5.6.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{SUPI_NAI}, EF_{Routing_Indicator} and EF_{SUCI_Calc_Info}.
- 2) In step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the REGISTRATION REQUEST.

SUPI format: 2

The NAI format for the SUCI takes the form:

type3.rid17.schid0.userid00-00-5E-00-53-00@5gc.mnc012.mcc345.3gppnetwork.org

where,

SUPI Type: 3

Home Network Identifier: 5gc.mnc012.mcc345.3gppnetwork.org

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 00-00-5E-00-53-00

5.6.2 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile A

5.6.2.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give to the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

5.6.2.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the USIM if Service n°124 is "available" and Service n°125 is "available" in EF_{UST}
- 2) SUPI is available in EF_{SUPI_NAI} if Service n°130 is "available" in EF_{UST}
- 3) A subscriber identifier is in the form of a SUPI in NAI format
- 4) The SUPI may contain:
 - a NSI, used for private networks as defined in TS 22.261 [43] or
 - a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or
 - a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].
- 5) The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.
- 6) This GET IDENTITY command shall be as per 7.5.2 in 3GPP TS 31.102 [4].
- 7) The USIM shall calculate the SUCI using the ECIES scheme profile A.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.

- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.
- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.6.2.3 Test purpose

- 1) To verify that the GET IDENTITY command is performed correctly by the ME.
- 2) To verify that the ME includes the SUCI received from the USIM within GET IDENTITY response in the 5GS mobile identity IE.

5.6.2.4 Method of test

5.6.2.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The NG-SS shall be configured with Home Network Private Key for profile A:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	C5	3C	22	20	8B	61	86	0B
	B9	B10	B11	B12	B13	B14	B15	B16
	06	C6	2E	54	06	A7	B3	30
	B17	B18	B19	B20	B21	B22	B23	B24
	C2	B5	77	AA	55	58	98	15
	B25	B26	B27	B28	B29	B30	B31	B32
	10	D1	28	24	7D	38	BD	1D

5G-NR UICC – non-IMSI SUPI Type is configured with:

Protection Scheme Identifier : ECIES scheme profile A

Key Index: 1

Home Network Public Key Identifier: 30

Home Network Public Key:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	5A	8D	38	86	48	20	19	7C
	B9	B10	B11	B12	B13	B14	B15	B16
	33	94	B9	26	13	B2	0B	91
	B17	B18	B19	B20	B21	B22	B23	B24
	63	3C	BD	89	71	19	27	3B
	B25	B26	B27	B28	B29	B30	B31	B32
	F8	E4	A6	F4	EE	C0	A6	50

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

EF_{UST} (USIM Service Table)

Settings from clause 4.10.1 of the present document apply with the following changes:

Logically:

Service n°125: SUCI calculation by the USIM available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8

Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx1 111x	xxxx xx1x		

EF_{SUPI_NAI} (SUPI as Network Access Identifier)

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	1A	76	65	72	79	6C	6F
	B9	B10	B11	B12	B13	B14	B15	B16
	6E	67	75	73	65	72	6E	61
	B17	B18	B19	B20	B21	B22	B23	B24
	6D	65	31	40	33	67	70	70
	B25	B26	B27	B28	B29	B30	B31	B32
	2E	63	6F	6D				

5.6.2.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.6.2.5 Acceptance criteria

- After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC
- After step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid1.hnkey30.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1" >.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C :

type1.rid17.schid1.hnkey30.ecckey977D8B2FDAA7B64AA700D04227D5B440630EA4EC50F9082273A26BB6
78C92222.cip8E358A1582ADB15322C10E515141D2039A.mac12E1D7783A97F1AC@3gpp.com

5.6.3 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B

5.6.3.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give to the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier.

5.6.3.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the USIM if Service n°124 is "available" and Service n°125 is "available" in EF_{UST}
- 2) SUPI is available in EF_{SUPI_NAI} if Service n°130 is "available" in EF_{UST}
- 3) A subscriber identifier is in the form of a SUPI in NAI format
- 4) The SUPI may contain:
 - a NSI, used for private networks as defined in TS 22.261 [43] or
 - a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or
 - a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].
- 5) The ME shall use the GET IDENTITY command in SUCI context to retrieve the SUCI calculated by the USIM.
- 6) This GET IDENTITY command shall be as per 7.5.2 in 3GPP TS 31.102 [4].
- 7) The USIM shall calculate the SUCI using the ECIES scheme profile B.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.
- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.
- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.6.3.3 Test purpose

- 1) To verify that the GET IDENTITY command is performed correctly by the ME.
- 2) To verify that the ME includes the SUCI received from the USIM within GET IDENTITY response in the 5GS mobile identity IE.

5.6.3.4 Method of test

5.6.3.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.

- Access control: unrestricted.

The default 5G-NR UICC – non-IMSI SUPI Type is used and installed into the Terminal.

The NG-SS shall be configured with Home Network Private Key for profile B:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	F1	AB	10	74	47	7E	BC	C7
	B9	B10	B11	B12	B13	B14	B15	B16
	F5	54	EA	1C	5F	C3	68	B1
	B17	B18	B19	B20	B21	B22	B23	B24
	61	67	30	15	5E	00	41	AC
	B25	B26	B27	B28	B29	B30	B31	B32
	44	7D	63	01	97	5F	EC	DA

5G-NR UICC – non-IMSI SUPI Type is configured with:

Protection Scheme Identifier: ECIES scheme profile B

Key Index: 1

Home Network Public Key Identifier: 27

Home Network Public Key:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	04	72	DA	71	97	62	34	CE
	B9	B10	B11	B12	B13	B14	B15	B16
	83	3A	69	07	42	58	67	B8
	B17	B18	B19	B20	B21	B22	B23	B24
	2E	07	4D	44	EF	90	7D	FB
	B25	B26	B27	B28	B29	B30	B31	B32
	4B	3E	21	C1	C2	25	6E	BC
	B33	B34	B35	B36	B37	B38	B39	B40
	D1	5A	7D	ED	52	FC	BB	09
	B41	B42	B43	B44	B45	B46	B47	B48
	7A	4E	D2	50	E0	36	C7	B9
	B49	B50	B51	B52	B53	B54	B55	B56
	C8	C7	00	4C	4E	ED	C4	F0
	B57	B58	B59	B60	B61	B62	B63	B64
	68	CD	7B	F8	D3	F9	00	E3
	B65							
	B4							

EF_{SUCL_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

EF_{UST} (USIM Service Table)

Settings from clause 4.10.1 of the present document apply with the following changes:

Logically:

Service n°125: SUCI calculation by the USIM available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx1 111x	xxxx xx1x		

EF_{SUPL_NAI} (SUPI as Network Access Identifier)

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	1A	76	65	72	79	6C	6F
	B9	B10	B11	B12	B13	B14	B15	B16
	6E	67	75	73	65	72	6E	61
	B17	B18	B19	B20	B21	B22	B23	B24
	6D	65	31	40	33	67	70	70
	B25	B26	B27	B28	B29	B30	B31	B32
	2E	63	6F	6D				

5.6.3.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.6.3.5 Acceptance criteria

- After step a) the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC
- After step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid2.hnkey27.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1">.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C :

type1.rid17.schid2.hnkey27.ecckey03759BB22C563D9F4A6B3C1419E543FC2F39D6823F02A9D71162B39399218B244B.cipBE22D8B9F856A52ED381CD7EAF4CF2D525.mac3CDDC61A0A7882EB@3gpp.com

5.6.4 UE identification after SUPI is changed

5.6.4.1 Definition and applicability

A globally unique temporary user identity for 5GS-based services, the 5G globally unique temporary identity (5G-GUTI), is used for identification within the signalling procedures. A UE supporting N1 mode includes a valid 5G-GUTI, if any is available, in the REGISTRATION REQUEST and DEREGISTRATION REQUEST messages.

5.6.4.2 Conformance requirement

The following 5GMM parameters shall be stored on the USIM if the corresponding file is present:

- a) 5G-GUTI;
- b) last visited registered TAI;
- c) 5GS update status; and
- d) 5G NAS security context parameters from a full native 5G NAS security context.

The presence and format of corresponding files on the USIM is specified in 3GPP TS 31.102 [4].

If the corresponding file is not present on the USIM, these 5GMM parameters are stored in a non-volatile memory in the ME together with the SUPI from the USIM in the EF_{SUPI_NAI}. These 5GMM parameters can only be used if the SUPI from the USIM in the EF_{SUPI_NAI} matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

Reference:

- TS 24.501 [42], clauses 5.3.3, 5.5.1.2 and Annex C.

5.6.4.3 Test purpose

- 1) To verify that the READ EF_{SUPI_NAI} command is performed correctly by the ME.
- 2) To verify that the ME deletes the 5GMM parameters from non-volatile memory in case SUPI is changed.
- 3) To verify that the GET IDENTITY command is performed correctly by the ME.
- 4) To verify that the ME includes the SUCI received from the USIM within GET IDENTITY response in the 5GS mobile identity IE.

5.6.4.4 Method of test

5.6.4.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC – non-IMSI SUPI Type is used and installed into the Terminal.

EF_{UST} (USIM Service Table)

Settings from clause 4.10.1 of the present document apply with the following changes:

Logically:

Service n°125:	SUCI calculation by the USIM	available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx1 111x	xxxx xx1x		

5G-NR UICC – non-IMSI SUPI Type is configured with:

Protection Scheme Identifier : null-scheme

Key Index: 0

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

5.6.4.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicates the 5GS registration type IE as "initial registration".
- The NG-SS sends a *REGISTRATION ACCEPT* message with the following parameters:
5G-GUTI: 24408300010266436587
TAI: 244 083 000001
- The UE sends a *REGISTRATION COMPLETE* message to the NG-SS.
- The UE is switched off, change the UICC configuration by setting the SUPI value from 00-00-5E-00-53-00@5gc.mnc012.mcc345.3gppnetwork.org to 00-00-5E-00-53-01@5gc.mnc012.mcc345.3gppnetwork.org.
- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI" with the new SUCI corresponding to the new SUPI value.

5.6.4.5 Acceptance criteria

- After step a) and f) the ME shall read EF_{SUPI_NAI} and then the ME shall send *GET IDENTITY* command with Identity Context in P2 as SUCI (0x01) to the 5G-NR UICC.
- In step g) the UE shall not use the 5G-GUTI or the Last visited registered TAI parameters in the *REGISTRATION REQUEST* message, instead it shall use the new SUCI as 5GS mobile identity IE.
- The UE shall include the new SUCI.

SUPI format: 2

The NAI format for the SUCI takes the form:

type3.rid17.schid0.userid00-00-5E-00-53-01@5gc.mnc012.mcc345.3gppnetwork.org

where,

SUPI Type: 3

Home Network Identifier: 5gc.mnc012.mcc345.3gppnetwork.org

Routing indicator: 17

Protection scheme id: 00

Home network public key Id: 0

Scheme output: 00-00-5E-00-53-01

5.6.5 UE identification by SUCI during initial registration – SUCI calculation by ME using profile A

5.6.5.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

5.6.5.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}
- 2) SUPI is available in EF_{SUPI_NAI} if Service n°130 is "available" in EF_{UST}
- 3) A subscriber identifier is in the form of a SUPI in NAI format
- 4) The SUPI may contain:
 - a NSI, used for private networks as defined in TS 22.261 [43] or
 - a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or
 - a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].
- 5) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EF_{SUCI_Calc_Info}.
- 6) The ME shall calculate the SUCI using the ECIES scheme profile A if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile A.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.
- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.
- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.6.5.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{SUPI_NAI} commands are performed correctly by the ME.
- 2) To verify that the terminal performs SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile A and the Home Network Public Key).

5.6.5.4 Method of test

5.6.5.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.

- Access control: unrestricted.

The NG-SS shall be configured with Home Network Private Key for profile A:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	C5	3C	22	20	8B	61	86	0B
	B9	B10	B11	B12	B13	B14	B15	B16
	06	C6	2E	54	06	A7	B3	30
	B17	B18	B19	B20	B21	B22	B23	B24
	C2	B5	77	AA	55	58	98	15
	B25	B26	B27	B28	B29	B30	B31	B32
	10	D1	28	24	7D	38	BD	1D

5G-NR UICC – non-IMSI SUPI Type is configured with:

EF_{SUCL_Calc_Info} (Subscription Concealed Identifier Calculation Information EF)

Logically:

Protection Scheme Identifier List data object

Protection Scheme Identifier 1 – ECIES scheme profile A

Key Index 1: 1

Protection Scheme Identifier 2 – ECIES scheme profile B

Key Index 2: 2

Protection Scheme Identifier 3 – null-scheme

Key Index 3: 0

Home Network Public Key List data object

Home Network Public Key 1 Identifier: 30

Home Network Public Key 1:

- 5A 8D 38 86 48 20 19 7C 33 94 B9 26 13 B2 0B 91 63 3C BD 89 71 19 27 3B F8 E4 A6 F4 EE C0 A6 50

Home Network Public Key 2 Identifier: 27

Home Network Public Key 2:

- 04 72 DA 71 97 62 34 CE 83 3A 69 07 42 58 67 B8 2E 07 4D 44 EF 90 7D FB 4B 3E 21 C1 C2 25 6E BC D1 5A 7D ED 52 FC BB 09 7A 4E D2 50 E0 36 C7 B9 C8 C7 00 4C 4E ED C4 F0 68 CD 7B F8 D3 F9 00 E3 B4

EF_{SUPL_NAI} (SUPI as Network Access Identifier)

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	1A	76	65	72	79	6C	6F
	B9	B10	B11	B12	B13	B14	B15	B16
	6E	67	75	73	65	72	6E	61
	B17	B18	B19	B20	B21	B22	B23	B24
	6D	65	31	40	33	67	70	70
	B25	B26	B27	B28	B29	B30	B31	B32

	2E	63	6F	6D				

5.6.5.4.2 Procedure

- a) The UE is switched on.
- b) The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- c) Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.6.5.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{SUPI_NAI} , EF_{UST} , $EF_{Routing\_Indicator}$ and $EF_{SUCI\_Calc\_Info}$.
- 2) After step b) the UE shall include the SUCI NAI in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid1.hnkey30.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1">.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 01

Home network public key Id: 30

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C:

type1.rid17.schid1.hnkey30.ecckey977D8B2FDAA7B64AA700D04227D5B440630EA4EC50F9082273A26BB678C92222.cip8E358A1582ADB15322C10E515141D2039A.mac12E1D7783A97F1AC@3gpp.com

5.6.6 UE identification by SUCI during initial registration – SUCI calculation by USIM using profile B

5.6.6.1 Definition and applicability

If the operator's decision is that the ME shall calculate the SUCI, the Home Network Operator shall provision a list of the Protection Scheme Identifiers that the operator allows in the USIM. The list of Protection Scheme Identifiers in the USIM may contain one or more Protection Scheme Identifiers in order of their priority. The ME shall read the SUCI calculation information from the USIM, including the SUPI, the Home Network Public Key, the Home Network Public Key Identifier, and the list of Protection Scheme Identifiers. The ME shall select the protection scheme from its supported schemes that has the highest priority in the list obtained from the USIM.

5.6.6.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the ME if Service n°124 is "available" and Service n°125 is not "available" in EF_{UST}

- 2) SUPI is available in EF_{SUPI_NAI} if Service n°130 is "available" in EF_{UST}
- 3) A subscriber identifier is in the form of a SUPI in NAI format
- 4) The SUPI may contain:
 - a NSI, used for private networks as defined in TS 22.261 [43] or
 - a GLI and an operator identifier of the 5GC operator, used for supporting FN-BRGs, as further described in TS 23.316 [55] or
 - a GCI and an operator identifier of the 5GC operator, used for supporting FN-CRGs and 5G-CRG, as further described in TS 23.316 [55].
- 5) As part of the SUCI calculation performed by the ME, the ME performs the reading procedure for EF_{SUCI_Calc_Info}.
- 6) The ME shall calculate the SUCI using the ECIES scheme profile B if highest priority of the protection schemes listed in the USIM is the ECIES scheme profile B.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.10, 4.4.11.11, 5.3.48 and 7.5.
- 3GPP TS 33.501 [41], clauses 6.12.1, 6.12.2 and Annex C.
- TS 23.003 [19], clauses 2.2A, 2.2B, 28.2, 28.7.2, 28.7.3, 28.15.2 and 28.15.5.
- 3GPP TS 24.501 [42], clause 5.5.1.2, 5.5.1.2.4.

5.6.6.3 Test purpose

- 1) To verify that the READ EF_{SUCI_Calc_Info}, EF_{Routing_Indicator} and EF_{SUPI_NAI} commands are performed correctly by the ME.
- 2) To verify that the terminal performs SUCI calculation procedure using the profile with the highest priority (i.e. ECIES scheme profile B and the Home Network Public Key).

5.6.6.4 Method of test

5.6.6.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC – non-IMSI SUPI Type is used and installed into the Terminal.

The NG-SS shall be configured with Home Network Private Key for profile B:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	F1	AB	10	74	47	7E	BC	C7
	B9	B10	B11	B12	B13	B14	B15	B16
	F5	54	EA	1C	5F	C3	68	B1
	B17	B18	B19	B20	B21	B22	B23	B24
	61	67	30	15	5E	00	41	AC
	B25	B26	B27	B28	B29	B30	B31	B32
	44	7D	63	01	97	5F	EC	DA

5G-NR UICC – non-IMSI SUPI Type is configured with:

EF_{SUPI_NAI} (SUPI as Network Access Identifier)

Logically: verylongusername1@3gpp.com

SUPI Type: NSI

Username: verylongusername1

Realm: 3gpp.com

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	1A	76	65	72	79	6C	6F
	B9	B10	B11	B12	B13	B14	B15	B16
	6E	67	75	73	65	72	6E	61
	B17	B18	B19	B20	B21	B22	B23	B24
	6D	65	31	40	33	67	70	70
	B25	B26	B27	B28	B29	B30	B31	B32
	2E	63	6F	6D				

5.6.6.4.2 Procedure

- The UE is switched on.
- The UE sends *REGISTRATION REQUEST* to the NG-SS indicating the 5GS registration type IE as "initial registration" and 5GS mobile identity information element type "SUCI".
- Upon reception of *REGISTRATION ACCEPT* message with a 5G-GUTI, the UE sends *REGISTRATION COMPLETE* message to the NG-SS.

5.6.6.5 Acceptance criteria

- After step a) the ME shall read $EF_{\text{SUPI\_NAI}}$, EF_{UST} , $EF_{\text{Routing\_Indicator}}$ and $EF_{\text{SUCI\_Calc\_Info}}$.
- After step b) the UE shall include the SUCI (coded below) in the 5GS mobile identity IE in the *REGISTRATION REQUEST*.

SUPI format: 1

The NAI format for the SUCI takes the form:

type1.rid17.schid2.hnkey27.ecckey<ECC ephemeral public key>.cip< encryption of "verylongusername1">.mac<MAC tag value>@3gpp.com

where,

SUPI Type: 1

Home Network Identifier: 3gpp.com

Routing indicator: 17

Protection scheme id: 02

Home network public key Id: 27

Scheme output: ECC ephemeral public key, encryption of "verylongusername1" and MAC tag value

Example with test data from 3GPP TS 33.501 [43] Annex C:

type1.rid17.schid2.hnkey27.ecckey03759BB22C563D9F4A6B3C1419E543FC2F39D6823F02A9D71162B39399218B244B.cipBE22D8B9F856A52ED381CD7EAF4CF2D525.mac3CDDC61A0A7882EB@3gpp.com

5.7 Handling subscription identifier privacy for 5G NSW0

5.7.1 UE identification by SUCI during initial registration – SUCI 5G NSW0 calculation by USIM using profile A

5.7.1.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier. If the UE determines to use the NSW0 service, the UE shall use the SUCI in NAI format as its identity when SUPI Type configured on the USIM is IMSI. If 5G NSW0 capability is enabled via configuration on the USIM, configuration on the USIM shall take precedence over the ME.

5.7.1.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the USIM if services n°124, n°125 are "available" in EF_{UST}.
- 2) 5G NSW0 procedures shall be performed if service n°142 is "available" in EF_{UST}.
- 3) The ME shall use the GET IDENTITY command in SUCI NSW0 as per 7.5.1.2 in 3GPP TS 31.102 [4].
- 4) The ME shall use the SUCI calculated by the USIM in EAP-ID-Response as defined in TS 33.501 [41] Annex S.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.11, 4.4.11.19, 5.3.48, 5.3.53 and 7.5.1.2;
- 3GPP TS 33.501 [41], clause Annex C and Annex S clause S.3.2;
- 3GPP TS 24.501 [42], clauses 5.5.1.2.2, 5.5.1.2.4;
- 3GPP TS 23.003 [14], clauses 28.7.9.2, 28.7.12.

5.7.1.3 Test purpose

- 1) To verify that the GET IDENTITY command in SUCI NSW0 is performed correctly by the ME.
- 2) To verify that the ME includes the SUCI received from the 5G-NR UICC supporting Rel-17 features within GET IDENTITY response in the EAP-ID-Response message.

5.7.1.4 Method of test

5.7.1.4.1 Initial conditions

The NG-SS WLAN Cell A_w and UE are configured as in clause 4.14.

The NG-SS shall be configured with Home Network Private Key for profile A:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	C5	3C	22	20	8B	61	86	0B
	B9	B10	B11	B12	B13	B14	B15	B16
	06	C6	2E	54	06	A7	B3	30
	B17	B18	B19	B20	B21	B22	B23	B24
	C2	B5	77	AA	55	58	98	15
	B25	B26	B27	B28	B29	B30	B31	B32
	10	D1	28	24	7D	38	BD	1D

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

The 5G-NR UICC supporting Rel-17 features is used with the following changes:

EF_{UST} (USIM Service Table)

Logically:

Service n°125	SUCI calculation by the USIM	available
Service n°142	5G NSW0 support	available

Coding:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	.....	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxx1 xxxx	xxxx xxxx	xx1x xxxx	xxxx xxxx

EF_{5GNSWO_CONF} (5G Non-Seamless WLAN Offload configuration)

Logically:

5G Non-Seamless WLAN Offload usage Indicator:	5G Non-Seamless WLAN Offload usage Indicator is enabled

Coding:

Byte	B1
Hex	01

5G-NR UICC supporting Rel-17 features is configured with:

Protection Scheme Identifier:	ECIES scheme profile A
Key Index:	1
Home Network Public Key Identifier:	30
Home Network Public Key:	

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	5A	8D	38	86	48	20	19	7C
	B9	B10	B11	B12	B13	B14	B15	B16
	33	94	B9	26	13	B2	0B	91
	B17	B18	B19	B20	B21	B22	B23	B24
	63	3C	BD	89	71	19	27	3B
	B25	B26	B27	B28	B29	B30	B31	B32
	F8	E4	A6	F4	EE	C0	A6	50

5.7.1.4.2 Procedure

- The UE is switched on.
- Bring up WLAN AP Cell A_w.
- The UE establishes a WLAN connection with the WLAN AN, as specified in IEEE 802.11 [62].
- The WLAN AN sends an EAP Identity/Request to the UE.
- The UE sends an EAP Response/Identity message to the WLAN AN.

5.7.1.5 Acceptance criteria

- After step d) the ME shall send GET IDENTITY command in SUCI NSW0 with Identity Context in P2 as SUCI 5G NSW0 (0x02) to the USIM.
- On step e) the UE shall include the SUCI returned by the USIM in the EAP Response/Identity message.

SUPI format: 0
 Home Network Identifier: 246/081
 Routing indicator: 17
 Protection scheme id: 01
 Home network public key Id: 30
 Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

5.7.2 UE identification by SUCI during initial registration – SUCI 5G NSWO calculation by USIM using profile B

5.7.2.1 Definition and applicability

If the operator's decision, indicated by the USIM, is that the USIM shall calculate the SUCI, then the USIM shall not give the ME any parameter for the calculation of the SUCI including the Home Network Public Key Identifier, the Home Network Public Key, and the Protection Scheme Identifier. If the ME determines that the calculation of the SUCI, indicated by the USIM, shall be performed by the USIM, the ME shall delete any previously received or locally cached parameters for the calculation of the SUCI including the Routing Indicator, the Home Network Public Key Identifier, the Home Network Public Key and the Protection Scheme Identifier. If the UE determines to use the NSWO service, the UE shall use the SUCI in NAI format as its identity when SUPI Type configured on the USIM is IMSI. If 5G NSWO capability is enabled via configuration on the USIM, configuration on the USIM shall take precedence over the ME.

5.7.2.2 Conformance requirement

- 1) SUCI calculation procedure shall be performed by the USIM if services n°124, n°125 are "available" in EF_{UST}.
- 2) 5G NSWO procedures shall be performed if service n°142 is "available" in EF_{UST}.
- 3) The ME shall use the GET IDENTITY command in SUCI NSWO context as per 7.5.1.2 in 3GPP TS 31.102 [4].
- 4) The ME shall use the SUCI calculated by the USIM in EAP-ID-Response as defined in TS 33.501 [41] Annex S.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.11, 4.4.11.19, 5.3.48, 5.3.53 and 7.5.1.2;
- 3GPP TS 33.501 [41], clause Annex C and Annex S clause S.3.2;
- 3GPP TS 24.501 [42], clauses 5.5.1.2.2, 5.5.1.2.4;
- 3GPP TS 23.003 [14], clauses 28.7.9.2, 28.7.12.

5.7.2.3 Test purpose

- 1) To verify that the GET IDENTITY command in SUCI NSWO is performed correctly by the ME.
- 2) To verify that the ME includes the SUCI received from the 5G-NR UICC supporting Rel-17 features within GET IDENTITY response in the EAP-ID-Response message.

5.7.2.4 Method of test

5.7.2.4.1 Initial conditions

The NG-SS WLAN Cell A_w and UE are configured as in clause 4.14.

The NG-SS shall be configured with Home Network Private Key for profile B:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	F1	AB	10	74	47	7E	BC	C7
	B9	B10	B11	B12	B13	B14	B15	B16
	F5	54	EA	1C	5F	C3	68	B1

	B17	B18	B19	B20	B21	B22	B23	B24
	61	67	30	15	5E	00	41	AC
	B25	B26	B27	B28	B29	B30	B31	B32
	44	7D	63	01	97	5F	EC	DA

EF_{SUCI_Calc_Info} (Subscription Concealed Identifier Calculation Information EF): Not available to the ME.

The 5G-NR UICC supporting Rel-17 features is used with the following changes:

EF_{UST} (USIM Service Table)

Logically:

Service n°125	SUCI calculation by the USIM	available
Service n°142	5G NSWO support	available

Coding:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	.....	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxx1 xxxx	xxxx xxxx	xx1x xxxx	xxxx xxxx

EF_{5GNSWO_CONF} (5G Non-Seamless WLAN Offload configuration)

Logically:

5G Non-Seamless WLAN Offload usage Indicator:

5G Non-Seamless WLAN Offload usage Indicator is enabled

Coding:

Byte	B1
Hex	01

5G-NR UICC supporting Rel-17 features is configured with:

Protection Scheme Identifier: ECIES scheme profile B

Key Index: 1

Home Network Public Key Identifier: 27

Home Network Public Key:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	04	72	DA	71	97	62	34	CE
	B9	B10	B11	B12	B13	B14	B15	B16
	83	3A	69	07	42	58	67	B8
	B17	B18	B19	B20	B21	B22	B23	B24
	2E	07	4D	44	EF	90	7D	FB
	B25	B26	B27	B28	B29	B30	B31	B32
	4B	3E	21	C1	C2	25	6E	BC
	B33	B34	B35	B36	B37	B38	B39	B40
	D1	5A	7D	ED	52	FC	BB	09
	B41	B42	B43	B44	B45	B46	B47	B48
	7A	4E	D2	50	E0	36	C7	B9
	B49	B50	B51	B52	B53	B54	B55	B56
	C8	C7	00	4C	4E	ED	C4	F0
	B57	B58	B59	B60	B61	B62	B63	B64
	68	CD	7B	F8	D3	F9	00	E3
	B65							
	B4							

The 5G-NR UICC supporting Rel-17 features is used and the UICC is installed into the ME

5.7.2.4.2 Procedure

- a) The UE is switched on.
- b) Bring up WLAN AP Cell A_w.
- c) The UE establishes a WLAN connection with the WLAN AN, as specified in IEEE 802.11 [IEEE_802.11].
- d) The WLAN AN sends an EAP Identity/Request to the UE.
- e) The UE sends an EAP Response/Identity message to the WLAN AN.

5.7.2.5 Acceptance criteria

- 1) After step d) the ME shall send GET IDENTITY command in SUCI NSW0 with Identity Context in P2 as SUCI 5G NSW0 (0x02) to the USIM.
- 2) On step e) the UE shall include the SUCI returned by the USIM in the EAP Response/Identity message.

SUPI format:	0
Home Network Identifier:	246/081
Routing indicator:	17
Protection scheme id:	02
Home network public key Id:	27

Scheme output: ECC ephemeral public key, encryption of 357935793 and MAC tag value

6 Security related Tests

6.1 PIN handling

6.1.1 Entry of PIN

6.1.1.1 Definition and applicability

The PIN is a number used to authenticate the user to the UICC for security. Entry of the correct PIN allows PIN-protected data to be accessed over the UICC-Terminal interface.

6.1.1.2 Conformance requirement

Following insertion of the UICC and switching on the UE, the Terminal shall check the state of the PIN. If the PIN is enabled, the Terminal asks the user for PIN verification.

The VERIFY PIN function verifies the PIN presented by the Terminal to the UICC.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.9;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.1.

6.1.1.3 Test purpose

- 1) To verify that the PIN verification procedure is performed by the Terminal correctly.
- 2) To verify that the basic public MMI string is supported.

6.1.1.4 Method of test

6.1.1.4.1 Initial conditions

The Terminal is connected to a UICC or UICC simulator with the PIN enabled, and powered off.

The default UICC is used.

6.1.1.4.2 Procedure

- a) The Terminal is powered on.
- b) When the UE is in the "PIN check" mode, the sequence "2468#" shall be entered.

6.1.1.5 Acceptance criteria

- 1) After step b) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "01".
- 2) After step b) the UE shall give an indication "OK", following a successful execution of the command.

6.1.2 Change of PIN

6.1.2.1 Definition and applicability

The PIN may be changed by the user, by entering the old and new PIN. The length of the PIN is between 4 and 8 digits.

6.1.2.2 Conformance requirement

The Terminal shall support the change of PIN procedure as defined in ETSI TS 102 221 [5], clause 11.1.10.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.10;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.2.

6.1.2.3 Test purpose

- 1) To verify that the PIN substitution procedure is performed correctly by the Terminal.
- 2) To verify that the basic public MMI string is supported.

6.1.2.4 Method of test

6.1.2.4.1 Initial conditions

The Terminal is connected to a UICC or UICC simulator with the PIN enabled.

The default UICC is used.

The Terminal is powered-on, with the correct PIN entered.

6.1.2.4.2 Procedure

- a) Enter "***04*2468*01234567*01234567#" or initiate an equivalent MMI dependent procedure to change the PIN from '2468' to '01234567'.
- b) The UE is switched off and on.
- c) When the UE is in the "PIN check" mode, the sequence "2468#" shall be entered.
- d) The UE is switched off and on.
- e) When the UE is in the "PIN check" mode, the sequence "01234567#" shall be entered.

6.1.2.5 Acceptance criteria

- 1) After step a), the Terminal shall send a CHANGE PIN command to the UICC, with the parameter P2 set to "01".
- 2) Following the successful execution of the command, the UE shall give an indication that the new PIN is accepted.
- 3) After step c), the UE shall give an indication that the entered PIN is not accepted.
- 4) After step e), the UE shall give an indication "OK".

6.1.3 Unblock PIN

6.1.3.1 Definition and applicability

After three consecutive wrong entries of the PIN, the PIN shall become blocked. The Unblock PIN command is used to unblock the PIN. This function may be performed whether or not the PIN is blocked.

6.1.3.2 Conformance requirement

The Terminal shall support the Unblock PIN command, as defined in ETSI TS 102 221 [5], clause 11.1.13.

Reference:

- ETSI TS 102 221 [5], clause 11.1.13;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.3.

6.1.3.3 Test purpose

- 1) To verify that the PIN unblocking procedure is performed correctly.
- 2) To verify that the basic public MMI string is supported.

6.1.3.4 Method of test

6.1.3.4.1 Initial conditions

The Terminal is connected to the UICC simulator.

The default UICC is used.

6.1.3.4.2 Procedure

Sequence A:

- a) The Terminal is powered on and the correct PIN is entered.
- b) Enter "***05*13243546*1234*1234#"
- c) The Terminal is powered off and on.
- d) Enter the new PIN: "1234#".
- e) The Terminal is powered off and on.
- f) Enter a wrong PIN three times.
- g) Enter "***05*13243546*2468*2468#".
- h) The Terminal is powered off and on.
- i) Enter the new PIN: "2468#".

Sequence B:

- a) The Terminal is powered on.
- b) Enter a wrong PIN three times.
- c) The user shall initiate a MMI dependent procedure to unblock the PIN with unblock code '13243546' and a new PIN '2468'.

- d) The Terminal is powered off and on.
- e) Enter the new PIN: "2468#".

6.1.3.5 Acceptance criteria

Sequence A:

- 1) After step b), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "01".
- 2) After step d), the Terminal shall indicate that the PIN has been accepted.
- 3) After step f), the Terminal shall indicate that the PIN has been blocked.
- 4) After step g), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "01".
- 5) After step i), the Terminal shall indicate that the PIN has been accepted.

Sequence B:

- 1) After step b), the Terminal shall indicate that the PIN has been blocked.
- 2) After step c), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "01".
- 3) After step e), the Terminal shall indicate that the PIN has been accepted.

6.1.4 Entry of PIN2

6.1.4.1 Definition and applicability

The PIN2 is a number used to authenticate the user to the UICC for security. Entry of the correct PIN2 allows PIN2-protected data to be accessed over the UICC-Terminal interface.

6.1.4.2 Conformance requirement

Before allowing the access to PIN2 protected data, the Terminal shall ask the user for PIN2 verification. Only after presenting the PIN2, the user shall get access to these data.

The VERIFY PIN function verifies the PIN2 presented by the Terminal to the UICC.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.9;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.1.

6.1.4.3 Test purpose

- 1) To verify that the PIN2 verification procedure is performed by the Terminal correctly.
- 2) To verify that the basic public MMI string is supported.

6.1.4.4 Method of test

6.1.4.4.1 Initial conditions

The Terminal is connected to a UICC or UICC simulator with the PIN enabled, and powered off.

The default UICC is used.

NOTE: To perform the UPDATE FDN data (as described in the procedure below), the default FDN UICC may be used.

6.1.4.4.2 Procedure

- a) The Terminal is powered on and the correct PIN is entered.
- b) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN)
- c) When the UE is in the "PIN2 check" mode, the sequence "3579#" shall be entered.

6.1.4.5 Acceptance criteria

- 1) After step c) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "81".
- 2) After step c) the UE shall give an indication "OK", following a successful execution of the command.

6.1.5 Change of PIN2

6.1.5.1 Definition and applicability

The PIN2 may be changed by the user, by entering the old and new PIN2. The length of the PIN2 is between 4 and 8 digits.

6.1.5.2 Conformance requirement

The Terminal shall support the change of PIN2 procedure as defined in ETSI TS 102 221 [5], clause 11.1.10.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.10;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.2.

6.1.5.3 Test purpose

- 1) To verify that the PIN2 substitution procedure is performed correctly by the Terminal.
- 2) To verify that the basic public MMI string is supported.

6.1.5.4 Method of test

6.1.5.4.1 Initial conditions

The Terminal is connected to a UICC or UICC simulator with the PIN2 enabled.

The default UICC is used.

NOTE: To perform the UPDATE FDN data (as described in the procedure below), the default FDN UICC may be used.

The Terminal is powered-on, with the correct PIN entered.

6.1.5.4.2 Procedure

- a) Enter "***042*3579*12345678*12345678#" or initiate an equivalent MMI dependent procedure to change PIN2 from '3579' to '12345678'.
- b) The UE is switched off and on and the correct PIN is entered.

- c) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- d) When the UE is in the "PIN2 check" mode, the sequence "3579#" shall be entered.
- e) The UE is switched off and on and the correct PIN is entered.
- f) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- g) When the UE is in the "PIN2 check" mode, the sequence "12345678#" shall be entered.

6.1.5.5 Acceptance criteria

- 1) After step a), the Terminal shall send a CHANGE PIN2 command to the UICC, with the parameter P2 set to "81".
- 2) Following the successful execution of the command, the UE shall give an indication that the new PIN2 is accepted.
- 3) After step d), the UE shall give an indication that the entered PIN2 is not accepted.
- 4) After step g), the UE shall give an indication "OK".

6.1.6 Unblock PIN2

6.1.6.1 Definition and applicability

After three consecutive wrong entries of the PIN2, the PIN2 shall become blocked. The Unblock PIN2 command is used to unblock the PIN2. This function may be performed whether or not the PIN2 is blocked.

6.1.6.2 Conformance requirement

The Terminal shall support the Unblock PIN2 command, as defined in ETSI TS 102 221 [5], clause 11.1.13.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.13;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.3.

6.1.6.3 Test purpose

- 1) To verify that the PIN2 unblocking procedure is performed correctly.
- 2) To verify that the basic public MMI string is supported.

6.1.6.4 Method of test

6.1.6.4.1 Initial conditions

The Terminal is connected to the UICC simulator.

The default UICC is used.

NOTE: To perform the UPDATE FDN data (as described in the procedure below), the default FDN UICC may be used.

6.1.6.4.2 Procedure

Sequence A:

- a) The Terminal is powered on and the correct PIN is entered.
- b) Enter "***052*08978675*1234*1234#"
- c) The Terminal is powered off and on and the correct PIN is entered.
- d) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- e) Enter the new PIN2: "1234#".
- f) The Terminal is powered off and on and the correct PIN is entered.
- g) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- h) Enter a wrong PIN2 three times.
- i) Enter "***052*08978675*3579*3579#".
- j) The Terminal is powered off and on and the correct PIN is entered.
- k) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- l) Enter the new PIN2: "3579#".

Sequence B:

- a) The Terminal is powered on.
- b) Enter a wrong PIN2 three times.
- c) The user shall initiate a MMI dependent procedure to unblock the PIN2 with unblock code '08978675' and a new PIN '3579'.
- d) The Terminal is powered off and on and the correct PIN is entered.
- e) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- f) Enter the new PIN2: "3579#".

6.1.6.5 Acceptance criterias

Sequence A:

- 1) After step b), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "81".
- 2) After step e), the Terminal shall indicate that the PIN2 has been accepted.
- 3) After step h), the Terminal shall indicate that the PIN2 has been blocked.
- 4) After step i), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "81".
- 5) After step l), the Terminal shall indicate that the PIN2 has been accepted.

Sequence B:

- 1) After step b), the Terminal shall indicate that the PIN2 has been blocked.
- 2) After step c), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "81".
- 3) After step f), the Terminal shall indicate that the PIN2 has been accepted.

6.1.7 Replacement of PIN

6.1.7.1 Definition and applicability

The Universal PIN may be used to replace a PIN used to authenticate the user to the UICC for security. In this case entry of the correct Universal PIN allows PIN-protected data to be accessed over the UICC-Terminal interface. ETSI TS 102 221 [5] defines the range of "01" to "08" as key reference of the PIN on a multi-verification capable UICC.

6.1.7.2 Conformance requirement

The Terminal shall support the usage of the Universal PIN as replacement PIN and the replacement procedure as defined in ETSI TS 102 221 [5], clause 11.1.11, as well as the procedure to disable the replacement defined in ETSI TS 102 221 [5], clause 11.1.12.

Reference:

- ETSI TS 102 221 [5], clauses 9, 11.1.11 and 11.1.12;
- TS 31.102 [4], clause 6.

6.1.7.3 Test purpose

- 1) To verify that the PIN replacement is supported by the Terminal correctly.
- 2) To verify that the PIN replacement procedure is performed by the Terminal correctly.
- 3) To verify that the procedure to disable the PIN replacement is performed by the Terminal correctly.

6.1.7.4 Method of test

6.1.7.4.1 Initial conditions

The Terminal is connected to the UICC simulator with the PIN enabled, and powered off.

The default UICC is used.

6.1.7.4.2 Procedure

- a) The Terminal is powered on.
- b) When the Terminal is in the "PIN check" mode, the sequence "2468#" shall be entered.
- c) The user shall initiate an MMI dependent procedure to replace the PIN by the Universal PIN.
- d) The Terminal is powered off and on and when the Terminal is in "PIN check" mode the sequence "2468#" shall be entered.
- e) The correct Universal PIN is entered.
- f) The user shall initiate an MMI dependent procedure to disable the replacement of the PIN by the Universal PIN.
- g) The Terminal is powered off and on and when the Terminal is in "PIN check" mode the sequence "2839#" shall be entered.
- h) The correct PIN is entered.

6.1.7.5 Acceptance criteria

- 1) After step b) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "01".

- 2) After step c), the Terminal shall send a DISABLE PIN command to the UICC, with parameter P1="91" and P2 = "01".
- 3) After step d) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "11" and after unsuccessful execution of the command the Terminal shall indicate that the PIN has not been accepted.
- 4) After step e) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "11" and after successful execution of the command the Terminal shall indicate that the PIN has been accepted.
- 5) After step f), the Terminal shall send an ENABLE PIN command to the UICC, with parameter P2 = "01".
- 6) After step g) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "01" and after unsuccessful execution of the command the Terminal shall indicate that the PIN has not been accepted.
- 7) After step e) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "01" and after successful execution of the command the Terminal shall indicate that the PIN has been accepted.

6.1.8 Change of Universal PIN

6.1.8.1 Definition and applicability

The Universal PIN may be changed by the user, by entering the old and new Universal PIN. The length of the Universal PIN is between 4 and 8 digits.

6.1.8.2 Conformance requirement

The Terminal shall support the change of PIN procedure as defined in ETSI TS 102 221 [5], clause 11.1.10.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.10;
- TS 31.102 [4], clause 6.

6.1.8.3 Test purpose

To verify that the PIN substitution procedure is performed correctly by the Terminal.

6.1.8.4 Method of test

6.1.8.4.1 Initial conditions

The Terminal is connected to a UICC or UICC simulator with the PIN enabled.

The default UICC is used with the following exception:

- The Universal PIN is used as a replacement of the PIN.

The Terminal is powered-on, with the correct Universal PIN entered.

6.1.8.4.2 Procedure

- a) The user shall initiate an MMI dependent procedure to change the Universal PIN to "01234567".
- b) The UE is switched off and on.
- c) When the UE is in the "PIN check" mode, the sequence "2839#" shall be entered.
- d) The UE is switched off and on.
- e) When the UE is in the "PIN check" mode, the sequence "01234567#" shall be entered.

6.1.8.5 Acceptance criteria

- 1) After step a), the Terminal shall send a CHANGE PIN command to the UICC, with the parameter P2 set to "11".
- 2) Following the successful execution of the command, the UE shall give an indication that the new (Universal) PIN is accepted.
- 3) After step c), the UE shall give an indication that the entered (Universal) PIN is not accepted.
- 4) After step e), the UE shall give an indication "OK".

6.1.9 Unblock Universal PIN

6.1.9.1 Definition and applicability

After three consecutive wrong entries of the PIN, the PIN shall become blocked. The Unblock PIN command is used to unblock the PIN. This function may be performed whether or not the PIN is blocked.

6.1.9.2 Conformance requirement

The Terminal shall support the Unblock PIN command, as defined in ETSI TS 102 221 [5], clause 11.1.13.

Reference:

- ETSI TS 102 221 [5], clause 11.1.13;
- TS 31.102 [4], clause 6.

6.1.9.3 Test purpose

To verify that the PIN unblocking procedure is performed correctly.

6.1.9.4 Method of test

6.1.9.4.1 Initial conditions

The Terminal is connected to the UICC simulator.

The default UICC is used.

6.1.9.4.2 Procedure

- a) The Terminal is powered on and the correct PIN is entered.
- b) The user shall initiate an MMI dependent procedure to unblock the Universal PIN and set the new Universal PIN value to "1234"
- c) The Terminal is powered off and on.
- d) Enter the new PIN: "1234#".
- e) The Terminal is powered off and on.
- f) Enter a wrong PIN three times.
- g) The user shall initiate an MMI dependent procedure to unblock the Universal PIN and set the new Universal PIN value to "2839".
- h) The Terminal is powered off and on.
- i) Enter the new PIN: "2839#".

6.1.9.5 Acceptance criteria

- 1) After step b), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "11".
- 2) After step d), the Terminal shall indicate that the (Universal) PIN has been accepted.
- 3) After step f), the Terminal shall indicate that the (Universal) PIN has been blocked.
- 4) After step g), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "11".
- 5) After step j), the Terminal shall indicate that the (Universal) PIN has been accepted.

6.1.10 Entry of PIN on multi-verification capable UICCs

6.1.10.1 Definition and applicability

The PIN is a number used to authenticate the user to the UICC for security. Entry of the correct PIN allows PIN-protected data to be accessed over the UICC-Terminal interface. ETSI TS 102 221 [5] defines the range of "01" to "08" as key reference of the PIN on a multi-verification capable UICC.

6.1.10.2 Conformance requirement

Following insertion of the UICC and switching on the UE, the Terminal shall check the state of the PIN. If the PIN is enabled, the Terminal asks the user for PIN verification.

The VERIFY PIN function verifies the PIN presented by the Terminal to the UICC.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.9;
- 3GPP TS 31.102 [4], clause 6;
- 3GPP TS 22.030 [12], clause 6.6.1.

6.1.10.3 Test purpose

- 1) To verify that the PIN verification procedure is performed by the Terminal correctly.
- 2) To verify that the basic public MMI string is supported.
- 3) To verify that the Terminal supports key references in the range of "01" to "08" as PIN.

6.1.10.4 Method of test

6.1.10.4.1 Initial conditions

The Terminal is connected to the UICC simulator with the PIN enabled, and powered off.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the key reference of the PIN and "87" as key reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

6.1.10.4.2 Procedure

- a) The Terminal is powered on.
- b) When the UE is in the "PIN check" mode, the sequence "8642#" shall be entered.

6.1.10.5 Acceptance criteria

- 1) After step b) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "07".
- 2) After step b) the UE shall give an indication "OK", following a successful execution of the command.

6.1.11 Change of PIN on multi-verification capable UICCs

6.1.11.1 Definition and applicability

The PIN may be changed by the user, by entering the old and new PIN. The length of the PIN is between 4 and 8 digits. ETSI TS 102 221 [5] defines the range of "01" to "08" as key reference of the PIN on a multi-verification capable UICC.

6.1.11.2 Conformance requirement

The Terminal shall support the change of PIN procedure as defined in ETSI TS 102 221 [5], clause 11.1.10.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.10;
- 3GPP TS 31.102 [4], clause 6;
- 3GPP TS 22.030 [12], clause 6.6.2.

6.1.11.3 Test purpose

- 1) To verify that the PIN substitution procedure is performed correctly by the Terminal.
- 2) To verify that the basic public MMI string is supported.
- 3) To verify that the Terminal supports key references in the range of "01" to "08" as PIN.

6.1.11.4 Method of test

6.1.11.4.1 Initial conditions

The Terminal is connected to the UICC simulator with the PIN enabled.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the reference of the PIN and "87" as reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

The Terminal is powered-on, with the correct PIN entered.

6.1.11.4.2 Procedure

- a) Enter "***04*8642*01234567*01234567#" or initiate an equivalent MMI dependent procedure to change the PIN from '8642' to '01234567'.

- b) The UE is switched off and on.
- c) When the UE is in the "PIN check" mode, the sequence "8642#" shall be entered.
- d) The UE is switched off and on.
- e) When the UE is in the "PIN check" mode, the sequence "01234567#" shall be entered.

6.1.11.5 Acceptance criteria

- 1) After step a), the Terminal shall send a CHANGE PIN command to the UICC, with the parameter P2 set to "07".
- 2) Following the successful execution of the command, the UE shall give an indication that the new PIN is accepted.
- 3) After step c), the UE shall give an indication that the entered PIN is not accepted.
- 4) After step e), the UE shall give an indication "OK".

6.1.12 Unblock PIN on multi-verification capable UICCs

6.1.12.1 Definition and applicability

After three consecutive wrong entries of the PIN, the PIN shall become blocked. The Unblock PIN command is used to unblock the PIN. This function may be performed whether or not the PIN is blocked. ETSI TS 102 221 [5] defines the range of "01" to "08" as key reference of the PIN on a multi-verification capable UICC.

6.1.12.2 Conformance requirement

The Terminal shall support the Unblock PIN command, as defined in ETSI TS 102 221 [5], clause 11.1.13.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.13;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.3.

6.1.12.3 Test purpose

- 1) To verify that the PIN unblocking procedure is performed correctly.
- 2) To verify that the basic public MMI string is supported.
- 3) To verify that the Terminal supports key references in the range of "01" to "08" as PIN.

6.1.12.4 Method of test

6.1.12.4.1 Initial conditions

The Terminal is connected to the UICC simulator.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the reference of the PIN and "87" as reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

6.1.12.4.2 Procedure

Sequence A:

- The Terminal is powered on and the correct PIN is entered.
- Enter "***05*64534231*1234*1234#"
- The Terminal is powered off and on.
- Enter the new PIN: "1234#".
- The Terminal is powered off and on.
- Enter a wrong PIN three times.
- Enter "***05*64534231*8642*8642#".
- The Terminal is powered off and on.
- Enter the new PIN: "8642#".

Sequence B:

- The Terminal is powered on.
- Enter a wrong PIN three times.
- The user shall initiate a MMI dependent procedure to unblock the PIN with unblock code '64534231' and a new PIN '8642'.
- The Terminal is powered off and on.

- e) Enter the new PIN: "8642#".

6.1.12.5 Acceptance criteria

Sequence A:

- 1) After step b), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "07".
- 2) After step d), the Terminal shall indicate that the PIN has been accepted.
- 3) After step f), the Terminal shall indicate that the PIN has been blocked.
- 4) After step g), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "07".
- 5) After step j), the Terminal shall indicate that the PIN has been accepted.

Sequence B:

- 1) After step b), the Terminal shall indicate that the PIN has been blocked.
- 2) After step c), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "07".
- 3) After step e), the Terminal shall indicate that the PIN has been accepted.

6.1.13 Entry of PIN2 on multi-verification capable UICCs

6.1.13.1 Definition and applicability

The PIN2 is a number used to authenticate the user to the UICC for security. Entry of the correct PIN2 allows PIN2-protected data to be accessed over the UICC-Terminal interface. ETSI TS 102 221 [5] defines the range of "81" to "88" as key reference of the PIN2 on a multi-verification capable UICC.

6.1.13.2 Conformance requirement

Before allowing the access to PIN2 protected data, the Terminal shall ask the user for PIN2 verification. Only after presenting the PIN2, the user shall get access to these data.

The VERIFY PIN function verifies the PIN2 presented by the Terminal to the UICC.

Reference:

- ETSI TS 102 221 [5], clause 9 and clause 11.1.9;
- 3GPP TS 31.102 [4], clause 6;
- 3GPP TS 22.030 [12], clause 6.6.1.

6.1.13.3 Test purpose

- 1) To verify that the PIN2 verification procedure is performed by the Terminal correctly.
- 2) To verify that the basic public MMI string is supported.
- 3) To verify that the Terminal supports key references in the range of "81" to "88" as PIN2.

6.1.13.4 Method of test

6.1.13.4.1 Initial conditions

The Terminal is connected to the UICC simulator with the PIN enabled, and powered off.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the reference of the PIN and "87" as reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

NOTE: To perform the UPDATE FDN data (as described in the procedure below), the default FDN UICC may be used. In this case the above mentioned exceptions shall apply.

6.1.13.4.2 Procedure

- The Terminal is powered on and the correct PIN is entered.
- The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- When the UE is in the "PIN2 check" mode, the sequence "9753#" shall be entered.

6.1.13.5 Acceptance criteria

- After step b) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "87".
- After step b) the UE shall give an indication "OK", following a successful execution of the command.

6.1.14 Change of PIN2 on multi-verification capable UICCs

6.1.14.1 Definition and applicability

The PIN2 may be changed by the user, by entering the old and new PIN2. The length of the PIN2 is between 4 and 8 digits. ETSI TS 102 221 [5] defines the range of "81" to "88" as key reference of the PIN2 on a multi-verification capable UICC.

6.1.14.2 Conformance requirement

The Terminal shall support the change of PIN2 procedure as defined in ETSI TS 102 221 [5], clause 11.1.10.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.10;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.2.

6.1.14.3 Test purpose

- 1) To verify that the PIN2 substitution procedure is performed correctly by the Terminal.
- 2) To verify that the basic public MMI string is supported.
- 3) To verify that the Terminal supports key references in the range of "81" to "88" as PIN2.

6.1.14.4 Method of test

6.1.14.4.1 Initial conditions

The Terminal is connected to the UICC simulator with the PIN2 enabled.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the reference of the PIN and "87" as reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

NOTE: To perform the UPDATE FDN data (as described in the procedure below), the default FDN UICC may be used. In this case the above mentioned exceptions shall apply.

The Terminal is powered-on, with the correct PIN entered.

6.1.14.4.2 Procedure

- Enter "***042*9753*12345678*12345678#" or initiate an equivalent MMI dependent procedure to change PIN2 from '9753' to '12345678'.
- The UE is switched off and on and the correct PIN is entered.
- The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- When the UE is in the "PIN2 check" mode, the sequence "9753#" shall be entered.
- The UE is switched off and on and the correct PIN is entered.
- The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- When the UE is in the "PIN2 check" mode, the sequence "12345678#" shall be entered.

6.1.14.5 Acceptance criteria

- After step a), the Terminal shall send a CHANGE PIN2 command to the UICC, with the parameter P2 set to "87".
- Following the successful execution of the command, the UE shall give an indication that the new PIN2 is accepted.
- After step d), the UE shall give an indication that the entered PIN2 is not accepted.
- After step g), the UE shall give an indication "OK".

6.1.15 Unblock PIN2 on multi-verification capable UICCs

6.1.15.1 Definition and applicability

After three consecutive wrong entries of the PIN2, the PIN2 shall become blocked. The Unblock PIN2 command is used to unblock the PIN2. This function may be performed whether or not the PIN2 is blocked. ETSI TS 102 221 [5] defines the range of "81" to "88" as key reference of the PIN2 on a multi-verification capable UICC.

6.1.15.2 Conformance requirement

The Terminal shall support the Unblock PIN2 command, as defined in ETSI TS 102 221 [5], clause 11.1.13.

Reference:

- ETSI TS 102 221 [5], clauses 9 and 11.1.13;
- TS 31.102 [4], clause 6;
- TS 22.030 [12], clause 6.6.3.

6.1.15.3 Test purpose

- 1) To verify that the PIN2 unblocking procedure is performed correctly.
- 2) To verify that the basic public MMI string is supported.
- 3) To verify that the Terminal supports key references in the range of "81" to "88" as PIN2.

6.1.15.4 Method of test

6.1.15.4.1 Initial conditions

The Terminal is connected to the UICC simulator.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the reference of the PIN and "87" as reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

NOTE: To perform the UPDATE FDN data (as described in the procedure below), the default FDN UICC may be used. In this case the above mentioned exceptions shall apply.

6.1.15.4.2 Procedure

Sequence A:

- a) The Terminal is powered on and the correct PIN is entered.
- b) Enter "***052*57687980*1234*1234#"
- c) The Terminal is powered off and on and the correct PIN is entered.
- d) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- e) Enter the new PIN2: "1234#".
- f) The Terminal is powered off and on and the correct PIN is entered.
- g) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- h) Enter a wrong PIN2 three times.
- i) Enter "***052*57687980*9753*9753#".
- j) The Terminal is powered off and on and the correct PIN is entered.
- k) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- l) Enter the new PIN2: "9753#".

Sequence B:

- a) The Terminal is powered on .
- b) Enter a wrong PIN2 three times.
- c) The user shall initiate a MMI dependent procedure to unblock the PIN2 with unblock code '57687980' and a new PIN2 '9753'.
- d) The Terminal is powered off and on and the correct PIN is entered.
- e) The access to a PIN2 protected data field shall be performed (e.g. UPDATE FDN).
- f) Enter the new PIN2: "9753#".

6.1.15.5 Acceptance criterias

Sequence A:

- 1) After step b), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "87".
- 2) After step e), the Terminal shall indicate that the PIN2 has been accepted.
- 3) After step h), the Terminal shall indicate that the PIN2 has been blocked.
- 4) After step i), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "87".
- 5) After step l), the Terminal shall indicate that the PIN2 has been accepted.

Sequence B:

- 1) After step b), the Terminal shall indicate that the PIN2 has been blocked.
- 2) After step c), the Terminal shall send an UNBLOCK PIN command to the UICC, with parameter P2 = "87".
- 3) After step f), the Terminal shall indicate that the PIN2 has been accepted.

6.1.16 Replacement of PIN with key reference "07"

6.1.16.1 Definition and applicability

The Universal PIN may be used to replace a PIN used to authenticate the user to the UICC for security. In this case entry of the correct Universal PIN allows PIN-protected data to be accessed over the UICC-Terminal interface.

6.1.16.2 Conformance requirement

The Terminal shall support the usage of the Universal PIN as replacement PIN and the replacement procedure as defined in ETSI TS 102 221 [5], clause 11.1.11, as well as the procedure to disable the replacement defined in ETSI TS 102 221 [5], clause 11.1.12.

Reference:

- ETSI TS 102 221 [5], clauses 9, 11.1.11 and 11.1.12;
- TS 31.102 [4], clause 6.

6.1.16.3 Test purpose

- 1) To verify that the PIN replacement is supported by the Terminal correctly.
- 2) To verify that the PIN replacement procedure is performed by the Terminal correctly.
- 3) To verify that the procedure to disable the PIN replacement is performed by the Terminal correctly.
- 4) To verify that the Terminal supports key references in the range of "01" to "08" as PIN.

6.1.16.4 Method of test

6.1.16.4.1 Initial conditions

The Terminal is connected to the UICC simulator with the PIN enabled, and powered off.

The default UICC is used with the following exceptions:

The UICC shall be configured to use "07" as the reference of the PIN and "87" as reference of the PIN2 with the following values:

PIN

Key reference: 07

Logically: 8642

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	38	36	34	32	FF	FF	FF	FF

Unblock PIN

Key reference 07

Logically: 64534231

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	36	34	35	33	34	32	33	31

PIN2

Key reference 87

Logically: 9753

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	39	37	35	33	FF	FF	FF	FF

Unblock PIN2

Key reference 87

Logically: 57687980

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	35	37	36	38	37	39	38	30

6.1.16.4.2 Procedure

- a) The Terminal is powered on.
- b) When the Terminal is in the "PIN check" mode, the sequence "8642#" shall be entered.
- c) The user shall initiate an MMI dependent procedure to replace the PIN by the Universal PIN.
- d) The Terminal is powered off and on and when the Terminal is in "PIN check" mode the sequence "8642#" shall be entered.
- e) The correct Universal PIN is entered.
- f) The user shall initiate an MMI dependent procedure to disable the replacement of the PIN by the Universal PIN.
- g) The Terminal is powered off and on and when the Terminal is in "PIN check" mode the sequence "2839#" shall be entered.
- h) The correct PIN is entered.

6.1.16.5 Acceptance criteria

- 1) After step b) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "07".
- 2) After step c), the Terminal shall send a DISABLE PIN command to the UICC, with parameter P1="91" and P2 = "07".
- 3) After step d) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "11" and after unsuccessful execution of the command the Terminal shall indicate that the PIN has not been accepted.
- 4) After step e) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "11" and after successful execution of the command the Terminal shall indicate that the PIN has been accepted.
- 5) After step f), the Terminal shall send an ENABLE PIN command to the UICC, with parameter P2 = "07".
- 6) After step g) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "07" and after unsuccessful execution of the command the Terminal shall indicate that the PIN has not been accepted.
- 7) After step h) the Terminal shall send a VERIFY PIN command to the UICC, with parameter P2 = "07" and after successful execution of the command the Terminal shall indicate that the PIN has been accepted.

6.2 Fixed Dialling Numbers (FDN) handling

6.2.1 Terminal and USIM with FDN enabled, EF_{ADN} readable and updateable

6.2.1.1 Definition and applicability

Fixed Dialling Numbers (FDN) is a service defined for the USIM. An enabled FDN service results in call restrictions for the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of FDN the UE runs the FDN capability request procedure during UICC-Terminal initialisation. During the initialisation the Terminal shall request the Emergency call codes of the USIM EF_{ECC}. At the time an emergency call is setup using the emergency call code read from the EF_{ECC}, the UE shall use the category of the emergency service indicated.

6.2.1.2 Conformance requirement

- 1) Recognising the state of the USIM (FDN enabled) the UE shall perform the UICC initialisation procedure as specified.
- 2) The UE allows call set-up to a directory number as stored in EF_{FDN}.
- 3) The UE allows call set-up to a directory number as stored in EF_{FDN} and extended by digits in the end.
- 4) The UE does not allow call set-up to a directory number stored in EF_{FDN} but with missing digits at the end.
- 5) The UE does not allow call set-up to a directory number having no reference in EF_{FDN}.
- 6) The UE does not allow call set-up of an emergency call using the emergency numbers stored in the Terminal except "112", "911", the emergency numbers stored on the SIM/USIM and emergency numbers downloaded from the serving network (if any).
- 7) The UE allows call set-up of an emergency call using the emergency number stored in the USIM.

Reference:

- TS 22.101 [11], clauses 8 and A.24;
- TS 31.102 [4], clauses 4.4.2, 4.2.24, 5.1.1 and 5.3.2;
- TS 24.008 [16], clause 10.5.4.33.

6.2.1.3 Test purpose

- 1) To verify that the Terminal allows call set-up to a FDN number.
- 2) To verify that the Terminal allows call set-up to a FDN number extended by some digits in the end.
- 3) To verify that the Terminal rejects call set-up to number having no reference in EF_{FDN}.
- 4) To verify that the Terminal rejects call set-up to a FDN number not completely corresponding to an entry in EF_{FDN}.
- 5) To verify that the Terminal does not allow emergency call set-up using the emergency number stored in the Terminal except "112", "911", the emergency numbers stored on the SIM/USIM and emergency numbers downloaded from the serving network (if any).
- 6) To verify that the Terminal allows emergency call set-up using the emergency number stored in the USIM.

6.2.1.4 Method of test

6.2.1.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing GERAN) transmits on the BCCH, with the following network parameters

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default FDN UICC with FDN service enabled and EF_{ADN} readable and updateable is installed into the Terminal.

The following expectation applies:

EF_{ECC} (Emergency Call Codes)

Logically:	Emergency call code:	"122";
	Emergency call code alpha identifier:	"TEST";
	Emergency call Service Category:	RFU.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Hex	21	F2	FF	54	45	53	54	00

6.2.1.4.2 Procedure

- a) The UE is powered on and PIN is entered.
- b) Using the MMI a call set-up to the fixed dialling number 1 (record 1) is attempted.
- c) Using the MMI a call set-up to the fixed dialling number 2 (record 2) extended by "123" in the end is attempted.
- d) Using the MMI a call set-up to a number which is equal to the fixed dialling number 3 (record 3) without the last digit is attempted, e.g. by recalling the fixed dialling number 3 and deleting the last digit (only in display).
- e) Using the MMI a call set-up to the number "1234567" is attempted.
- f) Using the MMI an emergency call set-up is attempted using an emergency call code stored in the Terminal, but not "112", "911" nor one of the emergency numbers stored on the SIM/USIM emergency numbers downloaded from the serving network (if any).
- g) Using the MMI an emergency call set-up is attempted using either "112", "911" or an emergency number downloaded from the serving network (if any).
- h) Using the MMI an emergency call set-up is attempted using the emergency call code stored in the USIM (i.e. "122").

NOTE: For step f) one of the emergency call codes according to TS 22.101 [11], clause 10.1, except "112" and "911", shall be used (i.e. "000", "08", "110", "118", "119" or "999").

6.2.1.5 Acceptance criteria

- 1) After step a) the UE is registered and in idle state.
- 2) After steps b) and c) the UE shall allow call set-up and send the requested number across the air interface.
- 3) After steps d), e) and f) the UE shall prevent call set-up.
- 4) After steps g) and h) the UE shall allow emergency call by indicating the call setup as "Emergency Call".

6.2.2 Terminal and USIM with FDN disabled

6.2.2.1 Definition and applicability

Fixed Dialling Numbers (FDN) is a service defined for the USIM. An enabled FDN service results in call restrictions for the UE. Only directory numbers which are stored in the EF_{FDN} may be dialled by the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of FDN the UE runs the FDN capability request procedure during UICC-Terminal initialisation. Deactivation of the service by the subscriber is possible under the control of PIN2 and switches the USIM into a "normal", non restrictive USIM.

6.2.2.2 Conformance requirement

- 1) Recognising the state of the USIM (FDN disabled) the UE correctly performs the UICC initialisation procedure.
- 2) The UE allows call set-up to a directory number as stored in EF_{FDN}.
- 3) The UE allows call set-up to a directory number as stored in EF_{ADN}.
- 4) The UE allows call set-up to a directory number given in manually.

Reference:

- R99: TS 22.101 [11], clauses 8 and A.24
- Rel-4: TS 22.101 [11], clauses 9 and A.25
- Rel-5, Rel-6: TS 22.101 [11], clauses 10 and A.25;
- TS 31.102 [4], clauses 4.4.2.3, 4.2.24, 4.2.47, 5.1.1 and 5.3.2.

6.2.2.3 Test purpose

- 1) To verify that the Terminal as a result of the state of the USIM correctly performs the UICC-Terminal initialisation procedure.
- 2) To verify that the Terminal allows call set-up to a FDN number.
- 3) To verify that the Terminal allows call set-up to a ADN number.
- 4) To verify that the Terminal allows call set-up to manually given number.

6.2.2.4 Method of test

6.2.2.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN) /SS (in case of a Terminal accessing GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default FDN UICC is used with the following exception:

EF_{EST} (Enable Service Table)

Logically: Fixed Dialling Numbers disabled.
Barred Dialling Numbers disabled.
APN Control list (ACL) disabled.

Coding: B1

binary 0000 0000

The UICC is installed into the Terminal and the UE is powered on.

6.2.2.4.2 Procedure

- a) Using the MMI a call set-up to the fixed dialling number 1 is attempted.
- b) Using the MMI a call set-up to the abbreviated dialling number 1 is attempted.
- c) Using the MMI a call set-up to the number "1234567" is attempted.

6.2.2.5 Acceptance criteria

After steps a), b) and c) the UE shall allow call set-up and send the requested number across the air interface.

6.2.3 Enabling, disabling and updating of FDN

6.2.3.1 Definition and applicability

FDN may be enabled and disabled by the subscriber under control of PIN2. Fixed dialling numbers are read with PIN and updated under control of PIN2.

6.2.3.2 Conformance requirement

- 1) Recognising the state of the USIM (FDN enabled) the UE shall perform the UICC initialisation procedure as specified.
- 2) The UE shall allow updating of EF_{FDN} by the use of PIN2.
- 3) The UE provides means to disable the FDN service by the use of PIN2.
- 4) The UE shall allow the use of EF_{ADN} after disabling of FDN.

Reference:

- R99: TS 22.101 [11], clauses 8 and A.24
- Rel-4: TS 22.101 [11], clauses 9 and A.25
- Rel-5, Rel-6: TS 22.101 [11], clause 10 and A.25;
- TS 31.102 [4], clauses 4.4.2.3, 4.2.24, 4.2.47, 5.1.1 and 5.3.2.

6.2.3.3 Test purpose

- 1) To verify that the Terminal correctly performs the update of a number in EF_{FDN}.
- 2) To verify that the Terminal correctly disables FDN service.
- 3) To verify that the Terminal recognises disabling of FDN and allows access to EF_{ADN}.

6.2.3.4 Method of test

6.2.3.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/SS (in case of a Terminal accessing GERAN) transmits on the BCCH, with the following network parameters

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default FDN UICC with FDN service enabled is installed into the Terminal.

6.2.3.4.2 Procedure

- a) The UE is powered on and PIN is entered.
- b) Using the MMI the directory number "+876543210" is stored in EF_{FDN} as fixed dialling number 1 (record 1). The alpha identifier is not changed. On request of the UE PIN2 is entered.
- c) Using the MMI the FDN disabling procedure is performed. On request of the UE PIN2 is entered.
- d) Using the MMI a call set-up to the abbreviated dialling number 1 (record 1) is attempted.
- e) The UE is soft-powered down.

6.2.3.5 Acceptance criteria

- 1) After step a) the UE is registered and in idle state.
- 2) After step c) the UE shall indicate that the FDN disabling procedure has been successful.
- 3) After step d) the UE shall allow call set-up and send the requested number across the air interface.
- 4) After step e) record 1 in EF_{FDN} , shall contain the following values:

Hex	B1 46	B2 44	B3 4E	B4 31	B5 31	B6 31	B7 06	B8 91	B9 78	B10 56	B11 34	B12 12	B13 F0
	B14 FF	B15 FF	B16 FF	B17 FF	B18 FF	B19 FF	B20 FF						

6.2.4 Terminal and USIM with FDN enabled, EF_{ADN} readable and updateable (Rel-4 and onwards)

6.2.4.1 Definition and applicability

Fixed Dialling Numbers (FDN) is a service defined for the USIM. An enabled FDN service results in call restrictions for the UE. The call restrictions are controlled by the Terminal. To ascertain the type of USIM and state of FDN the UE runs the FDN capability request procedure during UICC-Terminal initialisation. During the initialisation the Terminal shall request the Emergency call codes of the USIM EF_{ECC}. At the time an emergency call is setup using the emergency call code read from the EF_{ECC}, the UE shall use the category of the emergency service indicated.

6.2.4.2 Conformance requirement

- 1) Recognising the state of the USIM (FDN enabled) the UE shall perform the UICC initialisation procedure as specified.
- 2) The UE allows call set-up to a directory number as stored in EF_{FDN}.
- 3) The UE allows call set-up to a directory number as stored in EF_{FDN} and extended by digits in the end.
- 4) The UE does not allow call set-up to a directory number stored in EF_{FDN} but with missing digits at the end.
- 5) The UE does not allow call set-up to a directory number having no reference in EF_{FDN}.
- 6) The UE does not allow call set-up of an emergency call using the emergency numbers stored in the Terminal except "112", "911", the emergency numbers stored on the SIM/USIM and emergency numbers downloaded from the serving network (if any).

- 7) The UE allows call set-up of an emergency call using the emergency number stored in the USIM.
- 8) The UE shall indicate the emergency service category as "Mountain Rescue", when using the emergency number stored in the USIM.

Reference:

- Rel-4: TS 22.101 [11], clauses 9 and A.25
- Rel-5, Rel-6: TS 22.101 [11], clauses 10 and A.25;
- TS 31.102 [4], clauses 4.4.2, 4.2.24, 5.1.1 and 5.3.2;
- TS 24.008 [16], clause 10.5.4.33.

6.2.4.3 Test purpose

- 1) To verify that the Terminal allows call set-up to a FDN number.
- 2) To verify that the Terminal allows call set-up to a FDN number extended by some digits in the end.
- 3) To verify that the Terminal rejects call set-up to number having no reference in EF_{FDN} .
- 4) To verify that the Terminal rejects call set-up to a FDN number not completely corresponding to an entry in EF_{FDN} .
- 5) To verify that the Terminal does not allow emergency call set-up using the emergency number stored in the Terminal except "112", "911", the emergency numbers stored on the SIM/USIM and emergency numbers downloaded from the serving network (if any).
- 6) To verify that the Terminal allows emergency call set-up using the emergency number stored in the USIM.
- 7) To verify that the Terminal reads correctly the emergency service category.

6.2.4.4 Method of test

6.2.4.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing GERAN) transmits on the BCCH, with the following network parameters

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The default FDN UICC with FDN service enabled and EF_{ADN} readable and updateable is installed into the Terminal.

6.2.4.4.2 Procedure

- a) The UE is powered on and PIN is entered.
- b) Using the MMI a call set-up to the fixed dialling number 1 (record 1) is attempted.
- c) Using the MMI a call set-up to the fixed dialling number 2 (record 2) extended by "123" in the end is attempted.
- d) Using the MMI a call set-up to a number which is equal to the fixed dialling number 3 (record 3) without the last digit is attempted, e.g. by recalling the fixed dialling number 3 and deleting the last digit (only in display).
- e) Using the MMI a call set-up to the number "1234567" is attempted.
- f) Using the MMI an emergency call set-up is attempted using an emergency call code stored in the Terminal, but not "112", "911" nor one of the emergency numbers stored on the SIM/USIM emergency numbers downloaded from the serving network (if any).

- g) Using the MMI an emergency call set-up is attempted using either "112", "911" or an emergency number downloaded from the serving network (if any).
- h) Using the MMI an emergency call set-up is attempted using the emergency call code stored in the USIM (i.e. "122").

NOTE: For step f) one of the emergency call codes according to TS 22.101 [11], clause 10.1, except "112" and "911", shall be used (i.e. "000", "08", "110", "118", "119" or "999").

6.2.4.5 Acceptance criteria

- 1) After step a) the UE is registered and in idle state.
- 2) After steps b) and c) the UE shall allow call set-up and send the requested number across the air interface.
- 3) After steps d), e) and f) the UE shall prevent call set-up.
- 4) After steps g) and h) the UE shall allow emergency call by indicating the call setup as "Emergency Call".
- 5) After step h) the UE shall send the emergency service category correctly as "Mountain Rescue".

6.3 Void

6.4 Advice of charge (AoC) handling

6.4.1 AoC not supported by USIM

6.4.1.1 Definition and applicability

If the Terminal under test supports Advice of Charge Charging, it shall still look at the capability of the USIM, before responding to any AoCC information from the network.

6.4.1.2 Conformance requirement

- 1) An UE not supporting AoCC and in the outgoing call / U4 call delivered state, on receipt of a CONNECT message containing AoCC information shall acknowledge the CONNECT message but ignore and not acknowledge the AoCC information sent within the CONNECT.
- 2) An UE not supporting AoCC and in the outgoing call / U4 call delivered state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.
- 3) An UE not supporting AoCC and in the incoming call / U9 call confirmed state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.
- 4) An UE not supporting AoCC and in the U10 call active state, on receipt of a FACILITY message containing AoCC information, shall ignore and not acknowledge the AoCC information sent within the FACILITY.

References:

- TS 24.008 [16], clause 5.1.2.1;
- TS 23.086 [9], clauses 1.2, 1.3, 2.2 and 2.3;
- TS 24.086 [10], clause 2.

6.4.1.3 Test purpose

- 1) To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the outgoing call / U4 call delivered state, on receipt of a CONNECT message containing AoCC information shall acknowledge the CONNECT message but ignore and not acknowledge the AoCC information sent within the CONNECT.
- 2) To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the outgoing call / U4 call delivered state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.
- 3) To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the incoming call / U9 call confirmed state, on receipt of a FACILITY message containing AoCC information shall ignore and not acknowledge the AoCC information sent within the FACILITY.
- 4) To verify that an UE not supporting AoCC (where the Terminal does support AoCC but the USIM does not) and in the U10 call active state, on receipt of a FACILITY message containing AoCC information, shall ignore and not acknowledge the AoCC information sent within the FACILITY.

6.4.1.4 Method of test

6.4.1.4.1 Initial conditions

The Terminal shall be installed with a UICC or USIM simulator, with all elementary files coded as for the default UICC, with the exception of:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available;
- User controlled PLMN selector available;
- Fixed dialling numbers available;
- The GSM Access available;
- The Group Identifier level 1 and level 2 not available;
- AoC not available.
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available

Coding:	B1	B2	B3	B4	B5
binary	xxxx xx11	xxx0 xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

The generic call set up procedures for UTRAN defined in TS 34.108 [21], clause 7.2.3.2.3 and 7.2.3.1.3 and defined in TS 51.010-1 [22], clause 10 for GERAN are followed up to and including the reception, or transmission of the ALERTING message by the UE.

6.4.1.4.2 Procedure

- a) For an MO call in the U4 state the USS/SS transmits CONNECT containing AoCC information.
- b) For an MO call in the U4 state the USS/SS transmits FACILITY containing AoCC information.
- c) For an MT call in the U9 state the USS/SS transmits FACILITY containing AoCC information.
- d) For an MO call in the U10 state the USS/SS transmits FACILITY containing AoCC information.

6.4.1.5 Acceptance criteria

In all cases, the UE shall ignore the AoCC information sent to it in the Facility information elements as part of the CONNECT/FACILITY messages and not send any AoCC information acknowledgement. It shall be checked for 15 s that the UE does not transmit any AoCC information acknowledgement after the receipt of AoCC information.

6.4.2 Maximum frequency of ACM updating

6.4.2.1 Definition and applicability

During a call, the ACM shall be updated at the end of every interval. The interval length is the greater of either 5 s or the value given by parameter e2 (part of the Facility Information Element).

6.4.2.2 Conformance requirement

The ACM shall be incremented when the CCM is incremented or once every 5 s, whichever is the longer period.

When used the value '1C' shall be used as SFI for EF_{ACM}, for compatibility reasons the terminal shall accept other values.

Reference:

- TS 22.024 [8], clause 4.3, part h;
- TS 31.102 [4], clauses 4.2.9, 5.3.4 and Annex H.1.

6.4.2.3 Test purpose

- 1) To verify that the Terminal, during a call, increments the ACM every 5 s when e2 is less or equal to 5 s.
- 2) To verify that the Terminal is able to handle other values than '1C' as SFI of EF_{ACM}.

6.4.2.4 Method of test

6.4.2.4.1 Initial conditions

The Terminal shall be connected to the USIM simulator, with all elementary files coded as default with the exception of:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available;
User controlled PLMN selector available;
Fixed dialling numbers available;
The GSM Access available;
The Group Identifier level 1 and level 2 not available;
AoC available.
Service n 33 (Packed Switched Domain) shall be set to '1'
Enabled Services Table available

Coding:	B1	B2	B3	B4	B5
binary	xxxx xx11	xxx1 xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{ACM} (Accumulated call meter)

Logically: 50 units

The SFI of EF_{ACM} shall be set to '18'.

EF_{ACMmax} (Accumulated call meter maximum)

Logically: 150 units

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

User Equipment:

The UE is in MM-state "idle, updated".

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

6.4.2.4.2 Procedure

- a) The UE is made to initiate a call. The call establishment shall be performed according to the procedures defined in TS 34.108 [21], clause 7.2.3.2.3 extended by the messages of the AoCC. The call is established with AoCC e-parameters sent in a Facility IE in the CONNECT message, as given below. The UE returns the AoCC acknowledgement after the reception of the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent by the UE before or after the CONNECT ACKNOWLEDGE.
- b) The call is maintained for 90 s, then terminated by the USS. During the call, the USIM-simulator monitors the time intervals between successive INCREMENT commands. As the final INCREMENT command will have occurred as a result of call termination, the time interval calculated since the prior INCREMENT command shall be ignored.

Maximum Duration of Test:

2 minutes.

Expected Sequence A:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> USS	RRC CONNECTION REQUEST	
3	USS -> UE	RRC CONNECTION SETUP	
4	UE -> USS	RRC CONNECTION SETUP COMPLETE	MM procedure, to ensure the successful start of integrity in step 8
5	UE -> USS	CM SERVICE REQUEST	
6	USS -> UE	AUTHENTICATION REQUEST	
7	UE -> USS	AUTHENTICATION RESPONSE	RRC procedure, start of integrity is mandatory during call setup
8	USS -> UE	SECURITY MODE COMMAND	
9	UE -> USS	SECURITY MODE COMPLETE	
10	UE -> USS	SETUP	To a supported channel type
11	USS -> UE	CALL PROCEEDING	
12	USS -> UE	RADIO BEARER SETUP	
13	UE -> USS	RADIO BEARER SETUPCOMPLETE	As default message except contains Facility IE with contents as indicated in i) below
14	USS -> UE	ALERTING	
15	USS -> UE	CONNECT	
			Either A or B branch is taken
A16	UE -> USS	CONNECT ACKNOWLEDGE	As default message except contains Facility IE with contents as indicated in ii) below
A17	UE -> USS	FACILITY	
B16	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B17	UE -> USS	CONNECT ACKNOWLEDGE	
18			call duration 90 s after CAI information sent by USS,
19	USS -> UE	DISCONNECT	All connections of RRC are released.
20	UE -> USS	RELEASE	
21	USS -> UE	RELEASE COMPLETE	
22	USS -> UE	RRC CONNECTION RELEASE	

23	UE -> USS	RRC CONNECTION RELEASE COMPLETE	

Expected Sequence B:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call To a supported channel type As default message except contains Facility IE with contents as indicated in i) below
2	UE -> SS	CHANNEL REQUEST	
3	SS -> UE	IMMEDIATE ASSIGNMENT	
4	UE -> SS	CM SERVICE REQUEST	
5	SS -> UE	CM SERVICE ACCEPT	
6	UE -> SS	SETUP	
7	SS -> UE	CALL PROCEEDING	
8	SS -> UE	ASSIGNMENT COMMAND	
9	UE -> SS	ASSIGNMENT COMPLETE	
10	SS -> UE	ALERTING	
11	SS -> UE	CONNECT	
			Either A or B branch is taken
A12	UE -> SS	CONNECT ACKNOWLEDGE	As default message except contains Facility IE with contents as indicated in ii) below
A13	UE -> SS	FACILITY	
B12	UE -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B13	UE -> SS	CONNECT ACKNOWLEDGE	
14			call duration 90 s after CAI information sent by SS,
15	SS -> UE	DISCONNECT	The main signalling link is released.
16	UE -> SS	RELEASE	
17	SS -> UE	RELEASE COMPLETE	
18	SS -> UE	CHANNEL RELEASE	

Specific Message Contents:

- i) **FACILITY Information Element** with **Invoke = ForwardChargeInformation** component type as defined in TS 24.080 [17], clause 3.6.1 table 3.3.

For ASN.1 description see default message contents in TS 51.010-1 [22], clause 31.6.4.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

e-parameters:

parameter:	e1	e2	e3	e4	e5	e6	E7
value	1	1	1	0	0	0	0

Values shown in table are in the format and have units as in TS 22.024 [8], clause 3.

- ii) **FACILITY Information Element** with **Return Result** component type as defined in TS 24.080 [17], clause 3.6.1 table 3.4.

For ASN.1 description see default message contents in TS 51.010-1 [22], clause 31.6.4.

6.4.2.5 Acceptance criteria

The UE shall, during a call, send INCREMENT commands to the USIM every 5 s.

6.4.3 Call terminated when ACM greater than ACMmax

6.4.3.1 Definition and applicability

ACMmax gives the maximum value of ACM, at which the current chargeable calls shall be terminated and no further calls may be made (except emergency calls).

6.4.3.2 Conformance requirement

ACM shall be incremented by the value of CCM.

If the ACMmax is valid, and the ACM becomes equal to or exceeds the value of the ACMmax, then all calls in progress, chargeable to the user, shall be terminated by the UE, once the chargeable interval determined by the CAI has elapsed, (except emergency calls).

When used the value '1C' shall be used as SFI for EF_{ACM}, for compatibility reasons the terminal shall accept other values.

Reference:

- TS 22.024 [8], clauses 4.2.2 and 4.3 (part h);
- ETSI TS 102 221 [5], clause 14.1.3;
- TS 31.102 [4], clause 4.2.9, 5.3.4 and Annex H.1.

6.4.3.3 Test purpose

- 1) To verify that the Terminal increments the ACM by the correct number of units, even though this may take ACM above ACMmax.
- 2) To verify that the Terminal terminates the call.
- 3) To verify that the INCREMENT EF_{ACM} command is performed correctly by the terminal.
- 4) To verify that the Terminal is able to handle other values than '1C' as SFI of EF_{ACM}.

6.4.3.4 Method of test

6.4.3.4.1 Initial conditions

The Terminal shall be connected to a UICC or the USIM simulator, with all elementary files coded as default with the exception of:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available;
User controlled PLMN selector available;
Fixed dialling numbers available;
The GSM Access available;
The Group Identifier level 1 and level 2 not available;
AoC available.
Service n 33 (Packed Switched Domain) shall be set to '1'
Enabled Services Table available

Coding:	B1	B2	B3	B4	B5
binary	xxxx xx11	xxx1 xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{ACM} (Accumulated call meter)

Logically: 80 units

Coding:	B1	B2	B3
binary	0000 0000	0000 0000	0101 0000

The SFI of EF_{ACM} shall be set to '18'.

EF_{ACMmax} (Accumulated call meter maximum)

Logically: 94 units

Coding:	B1	B2	B3
binary	0000 0000	0000 0000	0101 1110

The USS transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

User Equipment:

The UE is in MM-state "idle, updated".

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

6.4.3.4.2 Procedure

- a) The UE is made to initiate a call. The call establishment shall be performed according to the procedures defined in TS 34.108 [21], clause 7.2.3.2.3 extended by the messages of the AoCC. The call is established with AoCC e-parameters sent in a Facility IE in the CONNECT message, as given below. The UE returns the AoCC acknowledgement after the reception of the CONNECT message. It is an implementation option whether the AoCC acknowledge is sent by the UE before or after the CONNECT ACKNOWLEDGE.
- b) The call is maintained until cleared by the UE (after 30 s).
- c) The contents of ACM are checked.

Maximum Duration of Test:

2 minutes.

Expected Sequence A:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> USS	RRC CONNECTION REQUEST	
3	USS -> UE	RRC CONNECTION SETUP	
4	UE -> USS	RRC CONNECTION SETUP COMPLETE	
4A	UE -> USS	CM SERVICE REQUEST	MM procedure, to ensure the successful start of integrity in step 8
5	USS -> UE	AUTHENTICATION REQUEST	
6	UE -> USS	AUTHENTICATION RESPONSE	RRC procedure, start of integrity is mandatory during call setup
7	USS -> UE	SECURITY MODE COMMAND	
8	UE -> USS	SECURITY MODE COMPLETE	To a supported channel type
9	UE -> USS	SETUP	
10	USS -> UE	CALL PROCEEDING	
11	USS -> UE	RADIO BEARER SETUP	
12	UE -> USS	RADIO BEARER SETUP COMPLETE	
13	USS -> UE	ALERTING	

14	USS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A15 A16	UE -> USS UE -> USS	CONNECT ACKNOWLEDGE FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B15 B16	UE -> USS UE -> USS	FACILITY CONNECT ACKNOWLEDGE	As default message except contains Facility IE with contents as indicated in ii) below
17			call duration 30 s after CAI information sent by USS
18 19 20 21 22	UE -> USS USS -> UE UE -> USS USS -> UE UE -> USS	DISCONNECT RELEASE RELEASE COMPLETE RRC CONNECTION RELEASE RRC CONNECTION RELEASE COMPLETE	All connections of RRC are released.

Expected Sequence B:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> SS	CHANNEL REQUEST	
3	SS -> UE	IMMEDIATE ASSIGNMENT	
4	UE -> SS	CM SERVICE REQUEST	
5	SS -> UE	CM SERVICE ACCEPT	
6	UE -> SS	SETUP	
7	SS -> UE	CALL PROCEEDING	
8	SS -> UE	ASSIGNMENT COMMAND	To a supported channel type
9	UE -> SS	ASSIGNMENT COMPLETE	
10	SS -> UE	ALERTING	
11	SS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A12 A13	UE -> SS UE -> SS	CONNECT ACKNOWLEDGE FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B12 B13	UE -> SS UE -> SS	FACILITY CONNECT ACKNOWLEDGE	As default message except contains Facility IE with contents as indicated in ii) below
14			call duration 30 s after CAI information sent by SS
15 16 17 18	UE -> SS SS -> UE UE -> SS SS -> UE	DISCONNECT RELEASE RELEASE COMPLETE CHANNEL RELEASE	The main signalling link is released.

Specific Message Contents:

- i) **FACILITY Information Element** with **Invoke = ForwardChargeInformation** component type as defined in TS 24.080 [17], clause 3.6.1 table 3.3.

For ASN.1 description see default message contents in TS 51.010-1 [22], clause 31.6.4.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

e-parameters:

parameter:	e1	e2	e3	e4	e5	e6	e7
value	10	10	1	0	0	0	0

Values shown in table are in the format and have units as in TS 22.024 [8], clause 3.

- ii) **FACILITY Information Element** with **Return Result** component type as defined in TS 24.080 [17], clause 3.6.1 table 3.4.

For ASN.1 description see default message contents in TS 51.010-1 [22], clause 31.6.4.

6.4.3.5 Acceptance criteria

- 1) The UE shall terminate the call correctly 30 s after CAI was sent.
- 2) The value of ACM shall be 100 units.

6.4.4 Response codes of increase command of ACM

6.4.4.1 Definition and applicability

ACM has a maximum value in terms of coding, and an attempt by the Terminal to exceed that value by sending an INCREASE command shall result in an error message from the USIM. As the maximum of the ACM is equal to the maximum value of ACMmax, all current chargeable calls shall be terminated and no further calls may be made (except emergency calls).

6.4.4.2 Conformance requirement

The Terminal shall perform the increasing procedure, sending the amount to be increased.

The running accumulated charge shall be stored in the ACM of the USIM.

Where this charge cannot be stored in the UE, use of the telecommunications service shall be prevented.

At the time ACM exceeds its maximum value, then all calls in progress, chargeable to the user, shall be terminated by the UE, once the chargeable interval determined by the CAI has elapsed, (except emergency calls).

When used the value '1C' shall be used as SFI for EF_{ACM}, for compatibility reasons the terminal shall accept other values.

References:

- TS 31.102 [4], clauses 4.2.9, 5.3.4 and Annex H.1;
- TS 22.086 [18], clauses 2.1 and 2.2.1.

6.4.4.3 Test purpose

- 1) To verify that the Terminal clears a charged call if the USIM indicates that the ACM cannot be increased.
- 2) To verify that the Terminal is able to handle other values than "1C" as SFI of EF_{ACM}.

6.4.4.4 Method of test

6.4.4.4.1 Initial conditions

The Terminal shall be connected to the USIM simulator, with all elementary files coded as default with the exception of:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available;
- User controlled PLMN selector available;
- Fixed dialling numbers available;
- The GSM Access available;
- The Group Identifier level 1 and level 2 not available;
- AoC available.
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available

Coding:	B1	B2	B3	B4	B5
binary	xxxx xx11	xxx1 xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{ACM} (Accumulated call meter)

Logically: (Maximum value – 10) units

Coding:	B1	B2	B3
binary	1111 1111	1111 1111	1111 0101

The SFI of EF_{ACM} shall be set to "18".

EF_{ACMmax} (Accumulated call meter maximum)

Logically: (Maximum value – 2) units

Coding:	B1	B2	B3
binary	1111 1111	1111 1111	1111 1101

The USS transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

User Equipment:

The UE is in MM-state "idle, updated".

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

6.4.4.4.2 Procedure

- a) The UE is made to initiate a call. The call establishment shall be performed according to the procedures defined in TS 34.108 [21], clause 7.2.3.2.3 extended by the messages of the AoCC. The call is established with AoCC e-parameters sent in a Facility IE in the CONNECT message, as given below. The UE returns the AoCC acknowledgement after reception of the CONNECT message. It is an implementation option whether the AoCC acknowledgement is sent by the UE before or after the CONNECT ACKNOWLEDGE.
- b) After an interval has elapsed, the Terminal increments the ACM. When an INCREASE command is received, the USIM-simulator sends back the error "98 50".
- c) Conditions are reset to those described in the initial conditions. Steps a) and b) of the test are repeated, except that the error code sent by the USIM simulator at step b) is now "6F xx".
- d) Conditions are reset to those described in the initial conditions. Steps a) and b) of the test are repeated, except that the error code sent by the USIM simulator at step b) is now "65 81".

References:

- ETSI TS 102 221 [5], clause 10.2.1.

Maximum Duration of Test:

3 minutes.

Expected Sequence A:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> USS	RRC CONNECTION REQUEST	
3	USS -> UE	RRC CONNECTION SETUP	
4	UE -> USS	RRC CONNECTION SETUP COMPLETE	
4A	UE -> USS	CM SERVICE REQUEST	MM procedure, to ensure the successful start of integrity in step 8
5	USS -> UE	AUTHENTICATION REQUEST	
6	UE -> USS	AUTHENTICATION RESPONSE	RRC procedure, start of integrity is mandatory during call setup
7	USS -> UE	SECURITY MODE COMMAND	
8	UE -> USS	SECURITY MODE COMPLETE	To a supported channel type
9			
10	UE -> USS	SETUP	
11	USS -> UE	CALL PROCEEDING	
12	USS -> UE	RADIO BEARER SETUP	
13	UE -> USS	RADIO BEARER SETUP COMPLETE	
14	USS -> UE	ALERTING	
15	USS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A16	UE -> USS	CONNECT ACKNOWLEDGE	As default message except contains Facility IE with contents as indicated in ii) below
A17	UE -> USS	FACILITY	
B16	UE -> USS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B17	UE -> USS	CONNECT ACKNOWLEDGE	
18			call duration 10s after CAI information sent by USS
19	UE -> USS	DISCONNECT	
20	USS -> UE	RELEASE	All connections of RRC are released.
21	UE -> USS	RELEASE COMPLETE	
22	USS -> UE	RRC CONNECTION RELEASE	
23	UE -> USS	RRC CONNECTION RELEASE COMPLETE	

Expected Sequence B:

Step	Direction	Message	Comments
1	UE		The UE is made to initiate a call
2	UE -> SS	CHANNEL REQUEST	
3	SS -> UE	IMMEDIATE ASSIGNMENT	
4	UE -> SS	CM SERVICE REQUEST	
5	SS -> UE	CM SERVICE ACCEPT	
6	UE -> SS	SETUP	
7	SS -> UE	CALL PROCEEDING	To a supported channel type
8	SS -> UE	ASSIGNMENT COMMAND	
9	UE -> SS	ASSIGNMENT COMPLETE	
10	SS -> UE	ALERTING	
11	SS -> UE	CONNECT	As default message except contains Facility IE with contents as indicated in i) below
			Either A or B branch is taken
A12	UE -> SS	CONNECT ACKNOWLEDGE	As default message except contains Facility IE with contents as indicated in ii) below
A13	UE -> SS	FACILITY	
B12	UE -> SS	FACILITY	As default message except contains Facility IE with contents as indicated in ii) below
B13	UE -> SS	CONNECT ACKNOWLEDGE	
14			call duration 10s after CAI information sent by SS
15	UE -> SS	DISCONNECT	
16	SS -> UE	RELEASE	The main signalling link is released.
17	UE -> SS	RELEASE COMPLETE	
18	SS -> UE	CHANNEL RELEASE	

Specific Message Contents:

- i) **FACILITY Information Element** with **Invoke = ForwardChargeInformation** component type as defined in TS 24.080 [17], clause 3.6.1 table 3.3.

For ASN.1 description see default message contents in TS 51.010-1 [22], clause 31.6.4.

The values of the e-parameters within the parameter part of the Facility Information Element shall be set as below:

e-parameters:

parameter:	e1	e2	e3	e4	e5	e6	e7
value	20	10	1	0	0	0	0

Values shown in table are in the format and have units as in TS 22.024 [8], clause 3.

- ii) **FACILITY Information Element** with **Return Result** component type as defined in TS 24.080 [17], clause 3.6.1 table 3.4.

For ASN.1 description see default message contents in TS 51.010-1 [22], clause 31.6.4.

6.4.4.5 Acceptance criteria

- 1) The UE shall terminate the call correctly 10 s after CAI was sent.
- 2) In each of the three cases, as described in steps b), c) and d) of the procedure, the UE shall terminate the call correctly when it receives an indication from the USIM that the ACM cannot be incremented.

7 PLMN related tests

7.1 FPLMN handling

7.1.1 Adding FPLMN to the Forbidden PLMN list

7.1.1.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

The registration attempts initiated by the 3G UE depends on UEs capabilities and can be one of the following:

- I. registration procedures for UEs supporting CS or
- II. registration procedures for UEs supporting PS or
- III. registration procedures for UEs supporting CS/PS

7.1.1.2 Conformance requirement

In case of a 2G terminal:

- 1) In automatic PLMN selection mode the UE shall only attempt a LOCATION UPDATE if it receives a BCCH containing a LAI that is not indicated in the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 2.3;
 - TS 31.102 [4], clauses 5.1.1 and 5.2.7.
- 2) After receipt of a LOCATION UPDATING REJECT message with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 3) After call termination the USIM shall contain the correct Ciphering Key Sequence Number.

Reference:

- TS 31.102 [4], clauses 5.1.2, 5.2.5 and 5.2.6;
- TS 21.111 [19], clause 10.1.

- 4) After call termination the USIM shall contain the correct TMSI and location information received by the UE.

Reference:

- TS 31.102 [4], clauses 5.1.2, 5.2.5 and 5.2.6;
- TS 21.111 [19], clause 10.1.

In case of a 3G terminal:

- 1) Depending on which domain the UE is going to be registered on, one of the following requirements should be fulfilled:
- I. In automatic PLMN selection mode the UE shall only attempt a LOCATION UPDATING REQUEST during registration on CS if it receives a BCCH containing a PLMN(MCC,MNC) that is not indicated in the EF_{FPLMN} in the USIM or
 - II. in automatic PLMN selection mode the UE shall only attempt a ATTACH REQUEST during registration on PS if it receives a BCCH containing a PLMN(MCC,MNC) that is not indicated in the EF_{FPLMN} in the USIM or
 - III. in automatic PLMN selection mode the UE shall only attempt a LOCATION UPDATING REQUEST and/or ATTACH REQUEST during registration on CS/PS if it receives a BCCH containing a PLMN(MCC,MNC) that is not indicated in the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 2) Depending on which domain the UE is going to be on, one of the following requirements should be fulfilled:

- I. After receipt of a LOCATION UPDATING REJECT message during registration on CS with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM or.
- II. after receipt of a ATTACH REJECT message during registration on PS with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM or
- III. after receipt of a LOCATION UPDATING REJECT and/or ATTACH REJECT message during registration on CS/PS with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 3) After call termination the USIM shall contain the correct Key Set Identifier.
- 4) Depending on which domain the UE is going to be registered on, one of the following requirements should be fulfilled:
 - I. after registration on CS the USIM shall contain the correct TMSI and location information received by the UE or
 - II. after registration on PS the USIM shall contain the correct P-TMSI and routing information received by the UE or
 - III. after registration on CS/PS the USIM shall contain the correct TMSI, P-TMSI, location information and routing information received by the UE.

Reference:

- TS 31.102 [4], clauses 5.1.2, 5.2.5 and 5.2.6;
- TS 21.111 [6], clause 10.1.

- 5) After call termination the USIM shall contain the correct TMSI and location information received by the UE.

Reference:

- TS 31.102 [4], clauses 5.1.2, 5.2.5 and 5.2.6;
- TS 21.111 [6], clause 10.1.

7.1.1.3 Test purpose

In case of a 2G terminal:

- 1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.
- 2) To verify that the EF_{FPLMN} is correctly updated by the Terminal after receipt of a LOCATION UPDATING REJECT message with cause "PLMN not allowed".
- 3) To verify that the EF_{LOCI} has been correctly updated by the Terminal.

In case of a 3G terminal:

- 1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.
- 2) To verify that after receipt of a
 - I. LOCATION UPDATING REJECT message with cause "PLMN not allowed" during registration on CS the Terminal correctly updates EF_{FPLMN} and EF_{Keys}, or
 - II. ATTACH REJECT message with cause "PLMN not allowed" during registration on PS the Terminal correctly updates EF_{FPLMN} and EF_{KeysPS}, or
 - III. LOCATION UPDATING REJECT and/or ATTACH REJECT message with cause "PLMN not allowed" during registration on CS/PS the Terminal correctly updates EF_{FPLMN}, EF_{Keys} and EF_{KeysPS}.
- 3) To verify that
 - I. the EF_{LOCI} has been correctly updated by the Terminal during registration on CS or.
 - II. the EF_{PSLOCI} has been correctly updated by the Terminal during registration on PS or.
 - III. the EF_{LOCI} and EF_{PSLOCI} have been correctly updated by the Terminal during registration on CS/PS.
- 4) (void)

7.1.1.4 Method of test

7.1.1.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 234/002/0001.
- RAI (MCC/MNC/LAC/RAC): 234/002/0001/05. (only for UTRAN cell)
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted

The default UICC is used with the following exception:

EF_{IMSI} (IMSI)

Logically: 2460811111111111

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9
Hex	08	29	64	80	11	11	11	11	11

EF_{LOCi} (Location Information)

Logically: LAI-MCC: 234
LAI-MNC: 007
LAI-LAC: 0000
TMSI: "32547698"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	32	54	76	98	32	74	00	00	00	FF	00

EF_{PSLOCi} (Packet Switched location Information)

Logically: RAI-MCC: 234
RAI-MNC: 007
RAI-LAC: 0000
RAI-RAC: 05
P-TMSI: "32547698"

P-TMSI signature value: "112233"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	32	54	76	98	11	22	33	32	74	00	00
	B12	B13	B14								
	00	05	00								

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

EF_{Keys} (Cipherring and Integrity Keys)

Logically: Key Set Identifier KSI: 02
Cipherring Keys CK: undefined
Integrity Keys IK: undefined

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	02	xx	xx	...	xx	xx	xx	...	xx	xx	xx

EF_{KeysPS} (Ciphering and Integrity Keys for Packet Switched domain)

Logically: Key Set Identifier KSI: 02
 Ciphering Keys CK: undefined
 Integrity Keys IK: undefined

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	02	xx	xx	...	xx	xx	xx	...	xx	xx	xx

In case of a Terminal accessing UTRAN "Expected Sequence A" shall be performed and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.1.1.4.2 Procedure

Expected Sequence A:

- a) The UE is powered on.
- b) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/003

The USS then resumes RF output on the BCCH.

- c) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/004

The USS then resumes RF output on the BCCH.

- d) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/005

The USS then resumes RF output on the BCCH.

- e) The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC/LAC):234/007/0001

RAI (MCC/MNC/LAC/RAC): 234/007/0001/05

The USS then resumes RF output on the BCCH.

- f) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

- g) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:

- I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS performs authentication and starts integrity protection, sends LOCATION UPDATING REJECT to the UE with cause "PLMN Not Allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

- II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS performs authentication and starts integrity protection, sends ATTACH REJECT to the UE with cause "PLMN Not Allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or

III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS performs authentication and starts integrity protection, sends LOCATION UPDATING REJECT and/or ATTACH REJECT to the UE with cause "PLMN Not Allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

The USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC/LAC): 234/008/0001

RAI (MCC/MNC/LAC/RAC): 234/008/0001/05

The USS then resumes RF output on the BCCH.

- h) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- i) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
- I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT with:
- LAI (MCC/MNC/LAC): 234/008/0001
- TMSI: "43658709"
- II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT to the UE with:
- RAI (MCC/MNC/LAC/RAC): 234/008/0001/05
- P-TMSI: "43658709"
- P-TMSI signature value "443322"
- III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT with some of the following values to the UE with:
- LAI (MCC/MNC/LAC): 234/008/0001
- TMSI: "43658709"
- RAI (MCC/MNC/LAC/RAC): 234/008/0001/05
- P-TMSI: "43658709"
- P-TMSI signature value "443322"
- j) After passing through the authentication procedure and after receipt of
- I. TMSI REALLOCATION COMPLETE during registration on CS from the UE the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- II. ATTACH COMPLETE during registration on PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE during registration on CS/PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- k) The UE is soft powered down.

Expected Sequence B:

- a) The UE is powered on.
- b) The SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/003

The SS then resumes RF output on the BCCH.
- c) The SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/004

The SS then resumes RF output on the BCCH.
- d) The SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/005

The SS then resumes RF output on the BCCH.
- e) The SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC/LAC):234/007/0001

The SS then resumes RF output on the BCCH.
- f) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- g) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING REJECT to the UE with cause "PLMN Not Allowed", followed by CHANNEL RELEASE.

The SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

LAI (MCC/MNC/LAC):234/008/0001

The SS then resumes RF output on the BCCH.
- h) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- i) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC): 234/008/0001

TMSI: "43658709"

to the UE.
- j) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- k) The UE is soft powered down.

7.1.1.5 Acceptance criteria

- 1) After each of the steps a) to d) the UE shall not attempt a LOCATION UPDATING and not a ATTACH procedure.

- 2) After step f) the 2G UE shall send LOCATION UPDATING REQUEST to the SS and a 3G terminal shall send
- I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.

2a) After step g) a terminal accessing UTRAN shall update

- I. during the rejected registration attempt on CS or

EF_{Keys} (Cipherring and Integrity Keys)

Logically: Key Set Identifier KSI: 07 (no key available)
Cipherring Keys CK: xx
Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	07	xx	xx	...	xx	xx	xx	...	xx	xx	Xx

- II. during the rejected registration attempt on PS or

EF_{KeysPS} (Cipherring and Integrity Keys for Packet Switched domain)

Logically: Key Set Identifier KSIPS: 07 (no key available)
Cipherring Keys CKPS: xx
Integrity Keys IKPS: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	07	xx	xx	...	xx	xx	xx	...	xx	xx	Xx

- III. during the rejected registration attempt on CS/PS.

EF_{Keys} (Cipherring and Integrity Keys)

Logically: Key Set Identifier KSI: 07 (no key available)
Cipherring Keys CK: xx
Integrity Keys IK: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	07	xx	xx	...	xx	xx	xx	...	xx	xx	Xx

EF_{KeysPS} (Cipherring and Integrity Keys for Packet Switched domain)

Logically: Key Set Identifier KSIPS: 07 (no key available)
Cipherring Keys CKPS: xx
Integrity Keys IKPS: xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	07	xx	xx	...	xx	xx	xx	...	xx	xx	Xx

- 3) After step h) the 2G UE shall send LOCATION UPDATING REQUEST to the SS and a 3G terminal shall send
- I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.

4) After step i) the 2G UE shall respond with TMSI REALLOCATION COMPLETE to the SS and a 3G terminal shall respond with

I. TMSI REALLOCATION COMPLETE to the USS during registration on CS or

II. ATTACH COMPLETE during registration on PS or

III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE to the USS during registration on CS/PS.

5) After step k) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 002 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 007

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	24	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	74	00						

For 2G terminals and 3G terminals supporting (CS and PS) or (CS only):

EF_{LocI} (Location Information)

Logically:

LAI-MCC:	234
LAI-MNC:	008
TMSI:	"43658709"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	43	65	87	09	32	84	00	xx	xx	xx	00

For 3G terminals supporting (CS and PS) or (PS only):

EF_{PSLocI} (Location Information)

Logically:

RAI-MCC:	234
RAI-MNC:	008
P-TMSI:	"43658709"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	43	65	87	09	xx	xx	xx	32	84	00	xx

Coding:	B12	B13	B14
Hex	xx	xx	00

In case of a Terminal accessing GERAN:

EF_{Keys} (Ciphering and Integrity Keys)

Logically:

Key Set Identifier KSI:	07 (not available)
Ciphering Keys CK:	xx
Integrity Keys IK:	xx

Coding:	B1	B2	B3	...	B16	B17	B18	...	B31	B32	B33
Hex	07	xx	xx	...	xx	xx	xx	...	xx	xx	Xx

7.1.2 UE updating forbidden PLMNs

7.1.2.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM provides storage for at least 4 entries, and is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

The registration attempts initiated by the 3G UE depends on UEs capabilities and can be one of the following:

- I. registration procedures for UEs supporting CS or
- II. registration procedures for UEs supporting PS or
- III. registration procedures for UEs supporting CS/PS

7.1.2.2 Conformance requirement

In case of a 2G terminal:

After the receipt of a LOCATION UPDATING REJECT message with the cause "PLMN not allowed" the UE shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2.4.
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

In case of a 3G terminal:

Depending on which domain the UE will be registered on, one of the following requirements should be fulfilled:

- I. After the receipt of a LOCATION UPDATING REJECT message during registration on CS with the cause "PLMN not allowed" the UE shall update the EF_{FPLMN} in the USIM or
- II. after receipt of a ATTACH REJECT message during registration on PS with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM or
- III. after receipt of a LOCATION UPDATING REJECT and/or ATTACH REJECT message during registration on CS/PS with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2.4.
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

7.1.2.3 Test purpose

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.2.4 Method of test

7.1.2.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 234/002/0001.

- RAI (MCC/MNC/LAC/RAC): 234/002/0001/05 (only for UTRAN cell)
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted

The default UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	empty
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.1.2.4.2 Procedure

Expected Sequence A:

- a) The UE is powered on.
- b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- c) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
 - I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS performs authentication and starts integrity protection, sends LOCATION UPDATING REJECT to the UE with the cause "PLMN not allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or
 - II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS performs authentication and starts integrity protection, sends ATTACH REJECT to the UE with cause "PLMN Not Allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or
 - III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS performs authentication and starts integrity protection, sends LOCATION UPDATING REJECT and/or ATTACH REJECT to the UE with cause "PLMN Not Allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- d) The UE is soft powered down.

Expected Sequence B:

- a) The UE is powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.

- c) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING REJECT to the UE with cause "PLMN Not Allowed", followed by CHANNEL RELEASE.
- d) The UE is soft powered down.

7.1.2.5 Acceptance criteria

- 1) After step b) the 2G UE shall send LOCATION UPDATING REQUEST to the SS and the 3G terminal shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.
- 2) After step d) the USIM shall contain:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 002
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

or

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	24	00						

7.1.3 UE deleting forbidden PLMNs

7.1.3.1 Definition and applicability

In manual PLMN selection mode the UE allows registration attempts to all available PLMNs, including forbidden PLMNs (as indicated by the forbidden PLMN list on the USIM). As a result of a successful registration procedure onto a PLMN which is in the forbidden PLMN list, the forbidden PLMN list is automatically updated by the UE.

The registration attempts initiated by the 3G UE depends on Ues capabilities and can be one of the following:

- I. registration procedures for Ues supporting CS or

- II. registration procedures for Ues supporting PS or
- III. registration procedures for Ues supporting CS/PS

7.1.3.2 Conformance requirement

In case of a 2G terminal:

- 1) In manual PLMN selection mode the UE shall be able to perform a LOCATION UPDATING attempt to a PLMN which is in the forbidden PLMN list.
 - TS 22.011 [6], clause 3.2.2.2.
- 2) After receipt of LOCATION UPDATING ACCEPT the UE shall delete the forbidden PLMN from the forbidden PLMN list.
 - TS 22.011 [6], clause 3.2.2.4.

In case of a 3G terminal:

- 1) Depending on which domain the UE will be registered on, one of the following requirements should be fulfilled:
 - I. In manual PLMN selection mode the UE shall be able to perform a LOCATION UPDATING attempt during registration on CS to a PLMN which is in the forbidden PLMN list or
 - II. In manual PLMN selection mode the UE shall be able to perform a ATTACH attempt during registration on PS to a PLMN which is in the forbidden PLMN list or
 - III. In manual PLMN selection mode the UE shall be able to perform a LOCATION UPDATING and/or ATTACH attempt during registration on CS/PS to a PLMN which is in the forbidden PLMN list.
 - TS 22.011 [6], clause 3.2.2.2.
 - TS 31.102 [4], clauses 5.1.1 and 5.2.7.
- 2) Depending on which domain the UE is going to be registered on, one of the following requirements should be fulfilled:
 - I. After receipt of LOCATION UPDATING ACCEPT message during registration on CS the UE shall delete the forbidden PLMN from the forbidden PLMN list OR
 - II. After receipt of ATTACH ACCEPT message during registration on PS the UE shall delete the forbidden PLMN from the forbidden PLMN list or
 - III. After receipt of LOCATION UPDATING ACCEPT and/or ATTCH ACCEPT message during registration on CS/PS the UE shall delete the forbidden PLMN from the forbidden PLMN list.
 - TS 22.011 [6], clause 3.2.2.4.

7.1.3.3 Test purpose

- 1) To verify that the 2G UE is able to perform a LOCATION UPDATING on a forbidden PLMN in manual PLMN selection mode or to verify that the 3G UE is able to perform
 - I. a LOCATION UPDATING REQUEST during registration on CS on a forbidden PLMN in manual PLMN selection mode or
 - II. a ATTACH REQUEST during registration on PS on a forbidden PLMN in manual PLMN selection mode or
 - III. a LOCATION UPDATING REQUEST and/or ATTACH REQUEST during registration on CS/PS on a forbidden PLMN in manual PLMN selection mode.
- 2) To verify that the UE after a successful registration attempt deletes the PLMN in the EF_{FPLMN} on the USIM.

7.1.3.4 Method of test

7.1.3.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 234/005/0001.
- RAI (MCC/MNC/LAC/RAC): 234/005/0001/05 (only for UTRAN cell).
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted

The default UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	234 005 (MCC MNC)
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	32	54	00	FF	FF	FF						

The UICC is installed into the Terminal and the UE is set to manual PLMN selection mode.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.1.3.4.2 Procedure

Expected Sequence A:

- a) The UE is powered on.
- b) PLMN with MCC/MNC of 234/005 is manually selected.
- c) After receipt of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- d) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
 - I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT with to the UE:

LAI (MCC/MNC/LAC):234/005/0001

TMSI: "12345678"
 - II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT with to the UE:

RAI (MCC/MNC/LAC/RAC): 234/005/0001/05

P-TMSI: "12345678"

P-TMSI signature value "AB1234"

- III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT with some of the following values to the UE with:

LAI (MCC/MNC/LAC): 234/005/0001

TMSI: "12345678"

RAI (MCC/MNC/LAC/RAC): 234/005/0001/05

P-TMSI: "12345678"

P-TMSI signature value "AB1234"

- e) After passing through the authentication procedure and after receipt of

- I. TMSI REALLOCATION COMPLETE during registration on CS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or
- II. ATTACH COMPLETE during registration on PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE during registration on CS/PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

- f) The UE is soft powered down.

Expected Sequence B:

- a) The UE is powered on.
- b) PLMN with MCC/MNC of 234/005 is manually selected.
- c) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- d) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):234/005/0001

TMSI: "12345678"

to the UE.

- e) After receipt of TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE.
- f) The UE is soft powered down.

7.1.3.5 Acceptance criteria

- 1) After step c) the 2G UE shall send LOCATION UPDATING REQUEST to the SS and the 3G terminal shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.

2) After step d) the 2G UE shall respond with TMSI REALLOCATION COMPLETE and the 3G terminal shall respond with

I. TMSI REALLOCATION COMPLETE to the USS during registration on CS or

II. ATTACH COMPLETE during registration on PS or

III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE to the USS during registration on CS/PS.

3) After step f) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	empty
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	FF	FF	FF	FF	FF	FF						

For 2G terminals and 3G terminals supporting CS only or CS/PS:

EF_{LOCi} (Location Information)

Logically:

LAI-MCC:	234
LAI-MNC:	005
TMSI:	"12345678"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	32	54	00	xx	xx	xx	00

For UEs supporting PS only or CS/PS :

EF_{PSLOCi} (Location Information)

Logically:

RAI-MCC:	234
RAI-MNC:	005
P-TMSI:	"12345678"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	xx	xx	xx	32	54	00	xx

Coding:	B12	B13	B14
Hex	xx	xx	00

7.1.4 Adding FPLMN to the forbidden PLMN list when accessing E-UTRAN

7.1.4.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.4.2 Conformance requirement

- 1) In automatic PLMN selection mode the UE shall only attempt a *AttachRequest* during registration on E-UTRAN/EPS if it receives a BCCH containing a PLMN (MCC,MNC) that is not indicated in the EF_{FPLMN} in the USIM

Reference:

- TS 22.011 [6], clause 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 2) After receipt of an *AttachReject* message during registration on E-UTRAN/EPS with the EMM cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2 2;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7

- 3) After receipt of an *AttachReject* message during registration on E-UTRAN/EPS with the EMM cause "PLMN not allowed" the Terminal shall update the EF_{EPSLOC} in the USIM.

Reference:

- TS 24.301 [26], clause 5.5.1.2.5;
- TS 31.102 [4], clauses 5.1.1 and 4.2.9.1.

- 3) After registration on E-UTRAN/EPS the USIM shall contain the correct GUTI and TAI received by the UE.

Reference:

- TS 31.102 [4], clauses 5.1.2 and 4.2.9.1;
- TS 21.111 [6], clause 10.1.

7.1.4.3 Test purpose

- 1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.
- 2) To verify that the EF_{FPLMN} is correctly updated by the Terminal after receipt of a *AttachReject* message with cause "PLMN not allowed" during registration.
- 3) To verify that the EF_{EPSLOC} has been correctly updated by the Terminal during registration.

7.1.4.4 Method of test

7.1.4.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.1.4.4.2 Procedure

- a) The UE is powered on.
- b) The E-USS/NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/003

The E-USS/NB-SS then resumes RF output on the BCCH.

- c) The E-USS/NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/004

The E-USS/NB-SS then resumes RF output on the BCCH.

- d) The E-USS/NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/005

The E-USS/NB-SS then resumes RF output on the BCCH.

- e) The E-USS/NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC):234/007/0001

The E-USS/NB-SS then resumes RF output on the BCCH.

- f) After receipt of an *RRConnectionRequest/RRConnectionRequest-NB* from the UE, the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- g) During registration and after receipt of an *AttachRequest* from the UE, the E-USS/NB-SS performs authentication and starts NAS integrity protection, sends *AttachReject* to the UE with cause "PLMN Not Allowed", followed by *RRConnectionRelease/RRConnectionRelease-NB*.
- h) The E-USS/NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC): 234/008/0001

The E-USS/NB-SS then resumes RF output on the BCCH.

- i) After receipt of an *RRConnectionRequest/RRConnectionRequest-NB* from the UE, the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- j) During registration and after receipt of an *AttachRequest* from the UE, the E-USS/NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* to the UE with:

TAI (MCC/MNC/TAC):234/008/ 0001

GUTI: "23400800010266436587"

- k) After receipt of *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRConnectionRelease/RRConnectionRelease-NB*.

- l) The UE is soft powered down.

7.1.4.5 Acceptance criteria

- 1) After each of the steps a) to d) the terminal shall not attempt an Attach procedure.
- 2) After step f) the terminal shall send *AttachRequest* during registration.
- 3) After step h) the terminal shall send *AttachRequest* during registration.
- 4) After step i) the terminal shall respond with *AttachComplete* during registration.
- 5) After step k) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 002 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 007

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	24	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	74	00						

EF_{EPSLOC} (EPS Information)

Logically:

GUTI:	23400800010266436587
Last visited registered TAI:	234/008/0001
EPS update status:	updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	32	84	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	32	84	00	00	01	00				

7.1.5 UE updating forbidden PLMNs when accessing E-UTRAN

7.1.5.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM provides storage for at least 4 entries, and is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.5.2 Conformance requirement

After receipt of a *AttachReject* message during registration with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2.4.
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

7.1.5.3 Test purpose

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.5.4 Method of test

7.1.5.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):234/002/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):234/002/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:	PLMN1: 234 001 (MCC MNC)											
	PLMN2: empty											
	PLMN3: 234 003											
	PLMN4: 234 004											
	PLMN5: 234 005											
	PLMN6: 234 006											
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.1.5.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRConnectionRequest/RRConnectionRequest-NB* from the UE, the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS/NB-SS performs authentication and starts NAS integrity protection, sends *AttachReject* to the UE with cause "PLMN Not Allowed", followed by *RRConnectionRelease/RRConnectionRelease-NB*.
- d) The UE is soft powered down.

7.1.5.5 Acceptance criteria

- 1) After step b) the terminal shall send *AttachRequest* during registration.
- 2) After step d) the USIM shall contain:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 001 (MCC MNC)

PLMN2: 234 002
 PLMN3: 234 003
 PLMN4: 234 004
 PLMN5: 234 005
 PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

or

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 001 (MCC MNC)
 PLMN2: 234 003
 PLMN3: 234 004
 PLMN4: 234 005
 PLMN5: 234 006
 PLMN6: 234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	24	00						

7.1.6 UE deleting forbidden PLMNs when accessing E-UTRAN

7.1.6.1 Definition and applicability

In manual PLMN selection mode the UE allows registration attempts to all available PLMNs, including forbidden PLMNs (as indicated by the forbidden PLMN list on the USIM). As a result of a successful registration procedure onto a PLMN which is in the forbidden PLMN list, the forbidden PLMN list is automatically updated by the UE.

7.1.6.2 Conformance requirement

- a) In manual PLMN selection mode the UE shall be able to perform a ATTACH attempt during registration to a PLMN which is in the forbidden PLMN list or
 - TS 22.011 [6], clause 3.2.2.2.
 - TS 31.102 [4], clauses 5.1.1 and 5.2.7.
- b) After receipt of *AttachAccept* message during registration the UE shall delete the forbidden PLMN from the forbidden PLMN list or
 - TS 22.011 [6], clause 3.2.2.4.

7.1.6.3 Test purpose

- 1) To verify that the terminal is able to perform an *AttachRequest* during registration on a forbidden PLMN in manual PLMN selection mode.
- 2) To verify that the UE after a successful registration attempt deletes the PLMN in the EF_{FPLMN} on the USIM.

7.1.6.4 Method of test

7.1.6.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/005/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/005/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:	PLMN1:	empty
	PLMN2:	empty
	PLMN3:	empty
	PLMN4:	empty
	PLMN5:	234 005 (MCC MNC)
	PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	32	54	00	FF	FF	FF						

The UICC is installed into the Terminal and the UE is set to manual PLMN selection mode.

7.1.6.4.2 Procedure

- a) The UE is powered on.
- b) PLMN with MCC/MNC of 234/005 is manually selected.
- c) After receipt of a *RRCCoordinateRequest/RRCCoordinateRequest-NB* from the UE, the E-USS/NB-SS sends *RRCCoordinateSetup/RRCCoordinateSetup-NB* to the UE, followed by *RRCCoordinateSetupComplete/RRCCoordinateSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- d) During registration and after receipt of a *AttachRequest* from the UE, the E-USS/NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):234/005/ 0001

GUTI: "23400500010266436587"

- e) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCoordinateRelease/RRCCoordinateRelease-NB*.
- f) The UE is soft powered down.

7.1.6.5 Acceptance criteria

- 1) After step c) the terminal shall send *AttachRequest* during registration
- 2) After step d) the terminal shall respond with *AttachComplete* during registration
- 3) After step f) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: empty
 PLMN2: empty
 PLMN3: empty
 PLMN4: empty
 PLMN5: empty
 PLMN6: empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	FF	FF	FF	FF	FF	FF						

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 23400500010266436587
 Last visited registered TAI: 234/005/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	32	54	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	32	54	00	00	01	00				

7.1.7 Updating the Forbidden PLMN list after receiving non-integrity protected reject message – UTRAN

7.1.7.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.7.2 Conformance requirement

After receipt of a not integrity-protected LOCATION UPDATING REJECT and/or ATTACH REJECT message during registration on CS/PS with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM thereafter that VPLMN will not be accessed by the MS in automatic mode:

- if the MS is not configured to use timer T3245, and the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value or;
- if the MS is not configured to use timer T3245, and the MS is not maintain a list of PLMN-specific attempt counters

Reference:

- TS 23.122 [31], clause 3.1.
- TS 22.011 [6], clause 3.2.2 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

7.1.7.3 Test purpose

To verify in automatic PLMN selection mode and after receipt of a LOCATION UPDATING REJECT and/or ATTACH REJECT message with cause "PLMN not allowed" during registration that the UE correctly updates EF_{FPLMN}, in the following cases:

- if the UE maintains a list of PLMN-specific attempt counters, and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value.
- if the UE does not maintain a list of PLMN-specific attempt counters.

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.7.4 Method of test

7.1.7.4.1 Initial conditions

The USS transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 234/002/0001.
- RAI (MCC/MNC/LAC/RAC): 234/002/0001/05.
- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

- PLMN1: 234 001 (MCC MNC)
- PLMN2: empty
- PLMN3: 234 003
- PLMN4: 234 004
- PLMN5: 234 005
- PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

7.1.7.4.2 Procedure

- a) The UE is powered on.
- b) Depending on which domain the UE is going to be registered on, the UE attempts to perform CS, PS or CS/PS registration to the USS.
- c) During registration and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS sends a not integrity-protected LOCATION UPDATING REJECT and/or ATTACH REJECT to the UE with cause "PLMN Not Allowed", followed by RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- d)) if the UE supports A.1/38, perform step e) after the expiry of timer T3247, otherwise perform step f).
- e) Using the settings declared in table B.1/AER006, repeat step c) – d) until the PLMN-specific attempt counters has reached the maximum value for that VPLMN.
- f) The UE is powered down

7.1.7.5 Acceptance criteria

- 1) After step b) the terminal shall send a LOCATION UPDATING REQUEST and/or *AttachRequest* during registration.
- 2) After steps c) the UE shall start the timer T3247 before the next registration attempt.
- 3) Depending on the support of A.1/38, either after step d) or step e), the EF_{FPLMN} in the USIM shall be updated as specified below.

EF_{FPLMN} (Forbidden PLMNs)

Logically:		PLMN1: 234 001 (MCC MNC) PLMN2: 234 002 PLMN3: 234 003 PLMN4: 234 004 PLMN5: 234 005 PLMN6: 234 006											
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	
Hex	32	14	00	32	24	00	32	34	00	32	44	00	
	B13	B14	B15	B16	B17	B18							
	32	54	00	32	64	00							

or

EF_{FPLMN} (Forbidden PLMNs)

Logically:		PLMN1: 234 001 (MCC MNC) PLMN2: 234 003 PLMN3: 234 004 PLMN4: 234 005 PLMN5: 234 006 PLMN6: 234 002											
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	
Hex	32	14	00	32	34	00	32	44	00	32	54	00	
	B13	B14	B15	B16	B17	B18							
	32	64	00	32	24	00							

7.1.8 Updating the Forbidden PLMN list after receiving non-integrity protected reject message – E-UTRAN

7.1.8.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.8.2 Conformance requirement

After receipt of a not integrity-protected ATTACH REJECT message during registration with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM thereafter that VPLMN will not be accessed by the MS in automatic mode:

- if the MS is not configured to use timer T3245, and the MS maintains a list of PLMN-specific attempt counters and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value or;

- if the MS is not configured to use timer T3245, and the MS is not maintain a list of PLMN-specific attempt counters

Reference:

- TS 23.122 [31], clause 3.1.
- TS 22.011 [6], clause 3.2.2 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

7.1.8.3 Test purpose

To verify in automatic PLMN selection mode and after receipt of *ATTACH REJECT* message with cause "PLMN not allowed" during registration that the UE correctly updates EF_{FPLMN}, for the following cases:

- if the UE maintains a list of PLMN-specific attempt counters, and the value of the PLMN-specific attempt counter for that VPLMN is equal to the MS implementation specific maximum value.
- if the UE does not maintain a list of PLMN-specific attempt counters.

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.8.4 Method of test

7.1.8.4.1 Initial conditions

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):234/002/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):234/002/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	empty
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.1.8.4.2 Procedure

- The UE is powered on.

- b) After receipt of a *RRCConnectionRequest/RRCConnectionRequest-NB* from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS/NB-SS sends non-integrity protected *AttachReject* message to the UE with cause "PLMN Not Allowed", followed by *RRCConnectionRelease/RRCConnectionRelease-NB*.
- d)) if the UE supports A.1/38, perform step e) after the expiry of timer T3247, otherwise perform step f).
- e) Using the settings declared in table B.1/AER006, repeat step c) – d) until the PLMN-specific attempt counters has reached the maximum value for that VPLMN.
- f) The UE is powered down.

7.1.8.5 Acceptance criteria

- 1) After step b) the terminal shall send *AttachRequest* during registration.
- 2) After steps c) the UE shall start the timer T3247 before the next registration attempt.
- 3) Depending on the support of A.1/38, either after step d) or step e), the EF_{FPLMN} in the USIM shall be updated as specified below.

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 002
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

or

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	24	00						

7.1.9 Adding FPLMN to the forbidden PLMN list when accessing satellite NG-RAN

7.1.9.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list

of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.9.2 Conformance requirement

- 1) In automatic PLMN selection mode the UE shall only attempt a REGISTRATION REQUEST during registration on satellite NG-RAN if it receives a BCCH containing a PLMN (MCC,MNC) that is not indicated in the EF_{FPLMN} in the USIM

Reference:

- TS 22.011 [6], clause 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 2) After receipt of a REGISTRATION REJECT message during registration on satellite NG-RAN with the 5GMM cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2 2;
- TS 31.102 [4], clauses 5.1.1, 5.2.7 and 4.2.16.

- 3) After receipt of a REGISTRATION REJECT message during registration on satellite NG-RAN with the 5GMM cause "PLMN not allowed" the Terminal shall update the EF_{5GS3GPPLOCI} in the USIM.

Reference:

- TS 24.501 [26], clause 5.5.1.2.5;
- TS 31.102 [4], clauses 5.1.1, 5.2.31 and 4.4.11.2.

- 4) After registration on satellite NG-RAN the USIM shall contain the correct 5G-GUTI and TAI received by the UE.

Reference:

- TS 31.102 [4], clause 5.1;
- TS 21.111 [6], clause 10.1.

7.1.9.3 Test purpose

- 1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.
- 2) To verify that the EF_{FPLMN} is correctly updated by the Terminal after receipt of a REGISTRATION REJECT message with cause "PLMN not allowed" during registration.
- 3) To verify that the EF_{5GS3GPPLOCI} has been correctly updated by the Terminal during registration.

7.1.9.4 Method of test

7.1.9.4.1 Initial conditions

The SAT-NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.1.9.4.2 Procedure

- a) The UE is powered on.
- b) The SAT-NG-SS stops all transmission of the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/003

The SAT-NG-SS then resumes transmission of the BCCH.

- c) The SAT-NG-SS stops all transmission of the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/004

The SAT-NG-SS then resumes transmission of the BCCH.

- d) The SAT-NG-SS stops all transmission of the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/005

The SAT-NG-SS then resumes transmission of the BCCH.

- e) The SAT-NG-SS stops all transmission of the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC):234/007/000001

The SAT-NG-SS then resumes transmission of the BCCH.

- f) After receipt of an *RRCRequest* from the UE, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.

- g) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS performs authentication and starts NAS integrity protection, sends REGISTRATION REJECT to the UE with cause "PLMN Not Allowed", followed by *RRCRelease*.

- h) The SAT-NG-SS stops all transmission of the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC): 234/008/000001

The SAT-NG-SS then resumes transmission of the BCCH.

- i) After receipt of an *RRCRequest* from the UE, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.

- j) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC):234/008/ 000001

5G-GUTI:"23400800010266436587"

- k) After receipt of REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.

- l) The UE is soft powered down.

7.1.9.5 Acceptance criteria

- 1) After each of the steps a) to d) the terminal shall not attempt an Attach procedure.
- 2) After step f) the terminal shall send REGISTRATION REQUEST during registration.

- 3) After step h) the terminal shall send REGISTRATION REQUEST during registration.
- 4) After step j) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 5) After step k) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1: 234 002 (MCC MNC)

PLMN2: 234 003

PLMN3: 234 004

PLMN4: 234 005

PLMN5: 234 006

PLMN6: 234 007

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	24	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	74	00						

EF_{5GS3GPPLOC} (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 234

MNC: 008

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 234 008 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	32	84	00	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	32	84	00
	B17	B18	B19	B20				
	00	00	01	00				

7.1.10 UE updating forbidden PLMNs when accessing satellite NG-RAN

7.1.10.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM provides storage for at least 4 entries, and is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.10.2 Conformance requirement

After receipt of a REGISTRATION REJECT message during registration on satellite NG-RAN with the 5GMM cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2.4.

- TS 31.102 [4], clauses 5.1.1, 4.2.16 and 5.2.7.

7.1.10.3 Test purpose

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.10.4 Method of test

7.1.10.4.1 Initial conditions

The SAT-NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):234/002/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	empty
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.1.10.4.2 Procedure

- The UE is powered on.
- After receipt of a *RRCRequest* from the UE, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS performs authentication and starts NAS integrity protection, sends REGISTRATION REJECT to the UE with cause "PLMN Not Allowed", followed by *RRCRelease*.
- The UE is soft powered down.

7.1.10.5 Acceptance criteria

- After step b) the terminal shall send REGISTRATION REQUEST during registration.
- After step c) the USIM shall contain:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 002
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005

PLMN6: 234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

or

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	24	00						

7.1.11 UE deleting forbidden PLMNs when accessing satellite NG-RAN in manual mode

7.1.11.1 Definition and applicability

In manual PLMN selection mode the UE allows registration attempts to all available PLMNs, including forbidden PLMNs (as indicated by the forbidden PLMN list on the USIM). As a result of a successful registration procedure onto a PLMN which is in the forbidden PLMN list, the forbidden PLMN list is automatically updated by the UE.

7.1.11.2 Conformance requirement

- a) In manual PLMN selection mode the UE shall be able to perform a REGISTRATION REQUEST attempt during registration to a PLMN which is in the forbidden PLMN list
 - TS 22.011 [6], clause 3.2.2.2.
 - TS 31.102 [4], clauses 5.1.1 and 5.2.7.
- b) After receipt of a REGISTRATION ACCEPT message during registration the UE shall delete the forbidden PLMN from the forbidden PLMN list
 - TS 22.011 [6], clause 3.2.2.4.

7.1.11.3 Test purpose

- 1) To verify that the terminal is able to perform a REGISTRATION REQUEST during registration on a forbidden PLMN in manual PLMN selection mode.
- 2) To verify that the UE after a successful registration attempt deletes the PLMN in the EF_{FPLMN} on the USIM.

7.1.11.4 Method of test

7.1.11.4.1 Initial conditions

The SAT-NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/005/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	234 005 (MCC MNC)
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	32	54	00	FF	FF	FF						

The UICC is installed into the Terminal and the UE is set to manual PLMN selection mode.

7.1.11.4.2 Procedure

- The UE is powered on.
- PLMN with MCC/MNC of 234/005 is manually selected.
- After receipt of a *RRCRequest* from the UE, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT with to the UE:

TAI (MCC/MNC/TAC):234/005/000001

5G-GUTI:"23400500010266436587"

- After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- The UE is soft powered down.

7.1.11.5 Acceptance criteria

- After step c) the terminal shall send REGISTRATION REQUEST during registration
- After step d) the terminal shall respond with REGISTRATION COMPLETE during registration
- After step e) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	empty
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	FF	FF	FF	FF	FF	FF						

EF_{5GS3GPPLOC1} (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC:	234
MNC:	005
AMF Region ID:	0
AMF Set ID:	4
AMF Pointer:	2
5G-TMSI:	66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 234 005 000001
 5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	32	54	00	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	32	54	00
	B17	B18	B19	B20				
	00	00	01	00				

7.1.12 Adding FPLMN to the forbidden PLMN list when accessing Satellite E-UTRAN in NB-S1 mode

7.1.12.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.12.2 Conformance requirement

- 1) In automatic PLMN selection mode the UE shall only attempt an *AttachRequest* during registration on satellite E-UTRAN in NB-S1 mode if it receives a BCCH containing a PLMN (MCC,MNC) that is not indicated in the EF_{FPLMN} in the USIM

Reference:

- TS 22.011 [6], clause 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 2) After receipt of an *AttachReject* message during registration on satellite E-UTRAN in NB-S1 mode with the EMM cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2 2;
- TS 31.102 [4], clauses 5.1.1, 5.2.7 and 4.2.16.

- 3) After receipt of an *AttachReject* message during registration on satellite E-UTRAN in NB-S1 mode with the EMM cause "PLMN not allowed" the Terminal shall update the EF_{EPSLOC} in the USIM.

Reference:

- TS 24.501 [26], clause 5.5.1.2.5;
- TS 31.102 [4], clauses 5.1.1, 5.2.31 and 4.4.11.2.

- 4) After registration on satellite E-UTRAN in NB-S1 mode the USIM shall contain the correct GUTI and TAI received by the UE.

Reference:

- TS 31.102 [4], clause 5.1;
- TS 21.111 [6], clause 10.1.

7.1.12.3 Test purpose

- 1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.
- 2) To verify that the EF_{FPLMN} is correctly updated by the Terminal after receipt of an *AttachReject* message with cause "PLMN not allowed" during registration.
- 3) To verify that the EF_{EPSLOC} has been correctly updated by the Terminal during registration.

7.1.12.4 Method of test

7.1.12.4.1 Initial conditions

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13

7.1.12.4.2 Procedure

- a) The UE is powered on.
- b) The SAT-NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/003

The SAT-NB-SS then resumes RF output on the BCCH.

- c) The SAT-NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/004

The SAT-NB-SS then resumes RF output on the BCCH.

- d) The SAT-NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/005

The SAT-NB-SS then resumes RF output on the BCCH.

- e) The SAT-NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC): 234/007/0001

The SAT-NB-SS then resumes RF output on the BCCH.

- f) After receipt of a *RRConnectionRequest-NB* from the UE, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.

- g) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS performs authentication and starts NAS integrity protection, sends *AttachReject* to the UE with cause "PLMN Not Allowed", followed by *RRConnectionRelease-NB*.

- h) The SAT-NB-SS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC): 234/008/0001

The SAT-NB-SS then resumes RF output on the BCCH.

- i) After receipt of a *RRConnectionRequest-NB* from the UE, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.

- j) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* to the UE with:

TAI (MCC/MNC/TAC): 234/008/0001

GUTI: "23400800010266436587"

- k) After receipt of *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRConnectionRelease-NB*.

- l) The UE is soft powered down.

7.1.12.5 Acceptance criteria

- 1) After each of the steps a) to d) the terminal shall not attempt an *Attach* procedure.
- 2) After step e) the terminal shall send *AttachRequest* during registration.
- 3) After step h) the terminal shall send *AttachRequest* during registration.
- 4) After step j) the terminal shall respond with *AttachComplete* during registration.
- 5) After step k) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:	PLMN1:	234 002 (MCC MNC)
	PLMN2:	234 003
	PLMN3:	234 004

PLMN4: 234 005
 PLMN5: 234 006
 PLMN6: 234 007

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	24	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	74	00						

EF_{EPSLOCI} (EPS Information)

Logically: GUTI: 23400800010266436587
 Last visited registered TAI: 234/008/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	32	84	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	32	84	00	00	01	00				

7.1.13 UE updating forbidden PLMNs when accessing Satellite E-UTRAN in NB-S1 mode

7.1.13.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM provides storage for at least 4 entries, and is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.13.2 Conformance requirement

After receipt of an *AttachReject* message during registration with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2.4.
- TS 31.102 [4], clauses 5.1.1, 4.2.16 and 5.2.7.

7.1.13.3 Test purpose

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.13.4 Method of test

7.1.13.4.1 Initial conditions

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	empty
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13

7.1.13.4.2 Procedure

- The UE is powered on.
- After receipt of a *RRConnectionRequest-NB* from the UE, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS performs authentication and starts NAS integrity protection, sends *AttachReject* to the UE with cause "PLMN Not Allowed", followed by *RRConnectionRelease-NB*.
- The UE is soft powered down.

7.1.13.5 Acceptance criteria

- After step b) the terminal shall send *AttachRequest* during registration.
- After step c) the USIM shall contain:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 002
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

or

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	24	00						

7.1.14 UE deleting forbidden PLMNs when accessing Satellite E-UTRAN in NB-S1 mode in manual mode

7.1.14.1 Definition and applicability

In manual PLMN selection mode the UE allows registration attempts to all available PLMNs, including forbidden PLMNs (as indicated by the forbidden PLMN list on the USIM). As a result of a successful registration procedure onto a PLMN which is in the forbidden PLMN list, the forbidden PLMN list is automatically updated by the UE.

7.1.14.2 Conformance requirement

- a) In manual PLMN selection mode the UE shall be able to perform an ATTACH attempt during registration to a PLMN which is in the forbidden PLMN list
 - TS 22.011 [6], clause 3.2.2.2.
 - TS 31.102 [4], clauses 5.1.1 and 5.2.7.
- b) After receipt of *AttachAccept* message during registration the UE shall delete the forbidden PLMN from the forbidden PLMN list
 - TS 22.011 [6], clause 3.2.2.4.

7.1.14.3 Test purpose

- 1) To verify that the terminal is able to perform an *AttachRequest* during registration on a forbidden PLMN in manual PLMN selection mode.
- 2) To verify that the UE after a successful registration attempt deletes the PLMN in the EF_{FPLMN} on the USIM.

7.1.14.4 Method of test

7.1.14.4.1 Initial conditions

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/005/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	234 005 (MCC MNC)
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	32	54	00	FF	FF	FF						

The UICC is installed into the Terminal and the UE is set to manual PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13

7.1.14.4.2 Procedure

- The UE is powered on.
- PLMN with MCC/MNC of 234/005 is manually selected.
- After receipt of a *RRCCConnectionRequest-NB* from the UE, the SAT-NB-SS sends *RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 234/005/0001

GUTI: "23400500010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRCCConnectionRelease-NB*.
- The UE is soft powered down.

7.1.14.5 Acceptance criteria

- After step c) the terminal shall send *AttachRequest* during registration
- After step d) the terminal shall respond with *AttachComplete* during registration
- After step e) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	empty
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	FF	FF	FF	FF	FF	FF						

EF_{EPSLOCi} (EPS Information)

Logically: GUTI: 23400500010266436587
 Last visited registered TAI: 234/005/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	32	54	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	32	54	00	00	01	00				

7.1.15 Adding FPLMN to the forbidden PLMN list when accessing Satellite E-UTRAN in WB-S1 mode

7.1.15.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM and providing storage for at least 4 entries is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.15.2 Conformance requirement

- 1) In automatic PLMN selection mode the UE shall only attempt an *AttachRequest* during registration on satellite E-UTRAN in WB-S1 mode if it receives a BCCH containing a PLMN (MCC, MNC) that is not indicated in the EF_{FPLMN} in the USIM

Reference:

- TS 22.011 [6], clause 2.3;
- TS 31.102 [4], clauses 5.1.1 and 5.2.7.

- 2) After receipt of an *AttachReject* message during registration on satellite E-UTRAN in WB-S1 mode with the EMM cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2 2;
- TS 31.102 [4], clauses 5.1.1, 5.2.7 and 4.2.16.

- 3) After receipt of an *AttachReject* message during registration on satellite E-UTRAN in WB-S1 mode with the EMM cause "PLMN not allowed" the Terminal shall update the EF_{EPSLOCi} in the USIM.

Reference:

- TS 24.501 [26], clause 5.5.1.2.5;
- TS 31.102 [4], clauses 5.1.1, 5.2.31 and 4.4.11.2.

- 4) After registration on satellite E-UTRAN in WB-S1 mode the USIM shall contain the correct GUTI and TAI received by the UE.

Reference:

- TS 31.102 [4], clause 5.1;
- TS 21.111 [6], clause 10.1.

7.1.15.3 Test purpose

- 1) To verify that in automatic PLMN selection mode the UE does not attempt to access PLMNs stored in EF_{FPLMN} on the USIM.
- 2) To verify that the EF_{FPLMN} is correctly updated by the Terminal after receipt of an *AttachReject* message with cause "PLMN not allowed" during registration.
- 3) To verify that the EF_{EPSLOCI} has been correctly updated by the Terminal during registration.

7.1.15.4 Method of test

7.1.15.4.1 Initial conditions

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13

7.1.15.4.2 Procedure

- a) The UE is powered on.
- b) The SAT-E-USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/003

The SAT-E-USS then resumes RF output on the BCCH.
- c) The SAT-E-USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/004

The SAT-E-USS then resumes RF output on the BCCH.
- d) The SAT-E-USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

PLMN (MCC/MNC): 234/005

The SAT-E-USS then resumes RF output on the BCCH.
- e) The SAT-E-USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC): 234/007/0001

The SAT-E-USS then resumes RF output on the BCCH.
- f) After receipt of a *RRCCConnectionRequest* from the UE, the SAT-E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- g) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS performs authentication and starts NAS integrity protection, sends *AttachReject* to the UE with cause "PLMN Not Allowed", followed by *RRCCConnectionRelease*.

- h) The SAT-E-USS stops all RF output on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:

TAI (MCC/MNC/TAC): 234/008/0001

The SAT-E-USS then resumes RF output on the BCCH.

- i) After receipt of a *RRConnectionRequest* from the UE, the SAT-E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- j) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* to the UE with:

TAI (MCC/MNC/TAC): 234/008/0001

GUTI: "23400800010266436587"

- k) After receipt of *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRConnectionRelease*.
- l) The UE is soft powered down.

7.1.15.5 Acceptance criteria

- 1) After each of the steps a) to d) the terminal shall not attempt an Attach procedure.
- 2) After step e) the terminal shall send *AttachRequest* during registration.
- 3) After step h) the terminal shall send *AttachRequest* during registration.
- 4) After step j) the terminal shall respond with *AttachComplete* during registration.
- 5) After step k) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 002 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 007

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	24	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	74	00						

EF_{EPSLOC} (EPS Information)

Logically:

GUTI:	23400800010266436587
Last visited registered TAI:	234/008/0001
EPS update status:	updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	32	84	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	32	84	00	00	01	00				

7.1.16 UE updating forbidden PLMNs when accessing Satellite E-UTRAN in WB-S1 mode

7.1.16.1 Definition and applicability

A list of forbidden PLMNs stored in the USIM provides storage for at least 4 entries, and is managed by the UE. In automatic PLMN selection mode the UE controls registration attempts to appropriate networks with respect to this list of forbidden PLMNs. As a result of a registration reject with the cause "PLMN not allowed" the UE stores the PLMN which rejected the update request in the USIM.

7.1.16.2 Conformance requirement

After receipt of an *AttachReject* message during registration with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM.

Reference:

- TS 22.011 [6], clause 3.2.2.4.
- TS 31.102 [4], clauses 5.1.1, 4.2.16 and 5.2.7.

7.1.16.3 Test purpose

To verify that the UE correctly updates the EF_{FPLMN}, i.e. fill up existing gaps in the elementary file before overwriting any existing entries.

7.1.16.4 Method of test

7.1.16.4.1 Initial conditions

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/002/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	empty
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	FF	FF	FF	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13

7.1.16.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRConnectionRequest* from the UE, the SAT-E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS performs authentication and starts NAS integrity protection, sends *AttachReject* to the UE with cause "PLMN Not Allowed", followed by *RRConnectionRelease*.
- d) The UE is soft powered down.

7.1.16.5 Acceptance criteria

- 1) After step b) the terminal shall send *AttachRequest* during registration.
- 2) After step c) the USIM shall contain:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 002
PLMN3:	234 003
PLMN4:	234 004
PLMN5:	234 005
PLMN6:	234 006

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	24	00	32	34	00	32	44	00
	B13	B14	B15	B16	B17	B18						
	32	54	00	32	64	00						

or

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	234 001 (MCC MNC)
PLMN2:	234 003
PLMN3:	234 004
PLMN4:	234 005
PLMN5:	234 006
PLMN6:	234 002

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	14	00	32	34	00	32	44	00	32	54	00
	B13	B14	B15	B16	B17	B18						
	32	64	00	32	24	00						

7.1.17 UE deleting forbidden PLMNs when accessing Satellite E-UTRAN in WB-S1 mode in manual mode

7.1.17.1 Definition and applicability

In manual PLMN selection mode the UE allows registration attempts to all available PLMNs, including forbidden PLMNs (as indicated by the forbidden PLMN list on the USIM). As a result of a successful registration procedure onto a PLMN which is in the forbidden PLMN list, the forbidden PLMN list is automatically updated by the UE.

7.1.17.2 Conformance requirement

- a) In manual PLMN selection mode the UE shall be able to perform an ATTACH attempt during registration to a PLMN which is in the forbidden PLMN list
 - TS 22.011 [6], clause 3.2.2.2.
 - TS 31.102 [4], clauses 5.1.1 and 5.2.7.
- b) After receipt of *AttachAccept* message during registration the UE shall delete the forbidden PLMN from the forbidden PLMN list
 - TS 22.011 [6], clause 3.2.2.4.

7.1.17.3 Test purpose

- 1) To verify that the terminal is able to perform an *AttachRequest* during registration on a forbidden PLMN in manual PLMN selection mode.
- 2) To verify that the UE after a successful registration attempt deletes the PLMN in the EF_{FPLMN} on the USIM.

7.1.17.4 Method of test

7.1.17.4.1 Initial conditions

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 234/005/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

EF_{FPLMN} (Forbidden PLMNs)

Logically:	PLMN1:	empty
	PLMN2:	empty
	PLMN3:	empty
	PLMN4:	empty
	PLMN5:	234 005 (MCC MNC)
	PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	32	54	00	FF	FF	FF						

The UICC is installed into the Terminal and the UE is set to manual PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13

7.1.17.4.2 Procedure

- a) The UE is powered on.
- b) PLMN with MCC/MNC of 234/005 is manually selected.

- c) After receipt of a *RRConnectionRequest* from the UE, the SAT-E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- d) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 234/005/0001

GUTI: "23400500010266436587"

- e) After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRConnectionRelease*.
- f) The UE is soft powered down.

7.1.17.5 Acceptance criteria

- 1) After step c) the terminal shall send *AttachRequest* during registration
- 2) After step d) the terminal shall respond with *AttachComplete* during registration
- 3) After step e) the USIM shall contain the following values:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	empty
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF
	B13	B14	B15	B16	B17	B18						
	FF	FF	FF	FF	FF	FF						

EF_{EPSLOCi} (EPS Information)

Logically:

GUTI:	23400500010266436587
Last visited registered TAI:	234/005/0001
EPS update status:	updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	32	54	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	32	54	00	00	01	00				

7.2 User controlled PLMN selector handling

7.2.1 UE updating the User controlled PLMN selector list

7.2.1.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of PLMNs may be performed by the subscriber.

7.2.1.2 Conformance requirement

The UE shall correctly replace the selected UPLMN in the User controlled PLMN selector list.

- TS 31.102 [4], clause 5.3.6.

7.2.1.3 Test purpose

To verify that the UE correctly updates the EF_{PLMNwACT}.

7.2.1.4 Method of test

7.2.1.4.1 Initial conditions

No USS/SS is required for this test.

The default UICC is used.

The UICC is installed into the Terminal and the UE is powered on.

7.2.1.4.2 Procedure

- a) The user shall initiate an MMI dependent procedure to change the second UPLMN in the User controlled PLMN selector list to MCC/MNC of 567/02, the ACT identifier shall set to UTRAN only.
- b) The UE is soft powered down.

7.2.1.5 Acceptance criteria

After step b) the USIM shall contain the following values:

EF_{PLMNwACT} (UPLMN Selector)

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	UTRAN
	2 nd PLMN:	567 02
	2 nd ACT	UTRAN
	3 rd PLMN:	244 082
	3 rd ACT	UTRAN
	4 th PLMN:	244 082
	4 th ACT	GSM
	5 th PLMN:	244 003
	5 th ACT	UTRAN
	6 th PLMN:	244 004
	6 th ACT	UTRAN
	7 th PLMN:	244 005
	7 th ACT	UTRAN
	8 th PLMN:	244 006
	8 th ACT	UTRAN
	9 th PLMN:	244 007
	9 th ACT	UTRAN
	10 th PLMN:	244 008
	10 th ACT	UTRAN
	11 th PLMN:	244 009
	11 th ACT	UTRAN
	12 th PLMN:	244 010
	12 th ACT	UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	80	00	65	F7	20	80	00	42	24	80	80	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30

42	24	80	00	80	42	34	00	80	00	42	44	00	80	00
B31 42	B32 54	B33 00	B34 80	B35 00	B36 42	B37 64	B38 00	B39 80	B40 00	B41 42	B42 74	B43 00	B44 80	B45 00
B46 42	B47 84	B48 00	B49 80	B50 00	B51 42	B52 94	B53 00	B54 80	B55 00	B56 42	B57 04	B58 10	B59 80	B60 00

7.2.2 UE recognising the priority order of the User controlled PLMN selector list with the same access technology.

7.2.2.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of UPLMNs may be performed by the subscriber by the use of the PIN.

The registration attempts initiated by the terminal accessing UTRAN depends on terminal's capabilities and can be one of the following:

- I. registration procedures for Ues supporting CS or
- II. registration procedures for Ues supporting PS or
- III. registration procedures for Ues supporting CS/PS

7.2.2.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority order of the UPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.

7.2.2.3 Test purpose

To verify that the UPLMN with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection.

7.2.2.4 Method of test

7.2.2.4.1 Initial conditions

The USS (in case of a Terminal accessing UTRAN)/SS (in case of a Terminal accessing a GERAN) transmits on two BCCHs, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/033/0001.
- RAI (MCC/MNC/LAC/RAC): 244/033/0001/05 (only for UTRAN cell).
- Access control: unrestricted.
- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/034/0001.
- RAI (MCC/MNC/LAC/RAC): 244/034/0001/05 (only for UTRAN cell).
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted

The default UICC is used with the following exception:

EF_{PLMNwACT} (UPLMN Selector with Access Technology)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 082
3 rd ACT:	UTRAN
3 rd PLMN:	244 082
3 rd AIGSI.....	
.....	
8 th PLMN:	244 034
8 th ACT:	GSM
9 th PLMN:	244 033
9 th ACT:	GSM
10 th PLMN:	244 008
10 th ACT:	UTRAN
11 th PLMN:	244 034
11 th ACT:	UTRAN
12 th PLMN:	244 033
12 th ACT:	UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	80	00	42	14	80	00	80	42	24	80	80	00
	B16	B17	B18	B19	B20	.....	.....	.....	.....						
	42	24	80	00	80	.....	.....	.....	.....						
				.....	.....	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
				.....	.....	42	44	30	00	80	42	34	30	00	80
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	80	00	42	44	30	80	00	42	34	30	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.2.2.4.2 Procedure

Expected Sequence A:

- The UE is powered on.
- After receipt on the cell related to the BCCH transmitting MCC/MNC 244/034 of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
 - During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT to the UE with the following values:

LAI (MCC/MNC/LAC): 244/034/0001

TMSI:"34567890"

- II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT to the UE with the following values:

RAI (MCC/MNC/LAC/RAC) 244/034/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

- III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT to the UE with some of the following values:

LAI (MCC/MNC/LAC): 244/034/0001

TMSI:"34567890"

RAI (MCC/MNC/LAC/RAC) 244/034/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

- d) After passing through the authentication procedure and after receipt of

- I. TMSI REALLOCATION COMPLETE during registration on CS from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or
- II. ATTACH COMPLETE during registration on PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE during registration on CS/PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

- e) The UE is soft powered down.

Expected Sequence B:

- a) The UE is powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):244/034/0001

TMSI: "34567890"

to the UE

- d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The UE is soft powered down.

7.2.2.5 Acceptance criteria

- 1) After step a) the UE accessing a GERAN shall send CHANNEL REQUEST on the cell related to the BCCH transmitting MCC/MNC 244/034 to the SS and the UE accessing UTRAN shall send an RRC CONNECTION REQUEST on the cell related to the BCCH transmitting MCC/MNC 244/034 to the USS.
- 2) After step b) the UE accessing a GERAN shall send LOCATION UPDATING REQUEST to the SS and the UE accessing UTRAN shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST to the USS during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.
- 3) After step c) the UE accessing a GERAN shall respond with TMSI REALLOCATION COMPLETE and the UE accessing UTRAN shall respond with
 - I. TMSI REALLOCATION COMPLETE to the USS during registration on CS or
 - II. ATTACH COMPLETE during registration on PS or
 - III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE to the USS during registration on CS/PS.
- 4) After step e) the USIM shall contain the following values:

For UEs accessing GERAN and UEs accessing UTRAN and supporting (CS and PS) or (CS only):

EF_{LOCi} (Location Information)

Logically:	LAI-MCC: 244 LAI-MNC: 034 TMSI: "34567890"										
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	42	44	30	xx	xx	xx	00

For UEs accessing UTRAN and supporting (CS and PS) or (PS only):

EF_{PSLOCi} (Location Information)

Logically:	RAI-MCC: 244 RAI-MNC: 034 P-TMSI: "34567890"										
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	42	44	30	xx
Coding:	B12	B13	B14								
Hex	xx	xx	00								

7.2.3 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference.

7.2.3.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.3.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.2.

7.2.3.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection.

7.2.3.4 Method of test

7.2.3.4.1 Initial conditions

For this test both a GSM SS and an UTRAN USS is needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/081/0001.
- RAI (MCC/MNC/LAC/RAC): 244/081/0001/05.
- Access control: unrestricted.

The UMTS USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- RAI (MCC/MNC/LAC/RAC): 244/082/0001/05.
- Access control: unrestricted.

The default UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.3.4.2 Procedure

- The UE is powered on.
- After receipt of a CHANNEL REQUEST from the UE on the GSM-cell related to the BCCH transmitting MCC/MNC 244/081, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- After receipt of a LOCATION UPDATING REQUEST and/or an ATTACH REQUEST from the UE, the SS sends a LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):244/081/0001

TMSI: "34567890"

and/or an ATTACH ACCEPT with:

RAI (MCC/MNC/LAC/RAC) 244/081/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

to the UE.

- d) After receipt of a TMSI REALLOCATION COMPLETE and/or an ATTACH COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The UE is soft powered down.

7.2.3.5 Acceptance criteria

- 1.) After step a) the UE shall send a CHANNEL REQUEST on the GSM-cell related to the BCCH transmitting MCC/MNC 244/081 to the SS.
- 2) After step b) the UE shall send a LOCATION UPDATING REQUEST and/or an ATTACH REQUEST to the SS.
- 3) After step c) the UE shall respond with a TMSI REALLOCATION COMPLETE and/or an ATTACH COMPLETE.
- 4) After step e) the USIM shall contain the following values:

For UEs supporting (CS and PS) or (CS only):

EF_{LOC} (Location Information)

Logically: LAI-MCC: 244
 LAI-MNC: 081
 TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	42	14	80	xx	xx	xx	00

For UEs supporting (CS and PS) or (PS only):

EF_{PSLOC} (Location Information)

Logically: RAI-MCC: 244
 RAI-MNC: 081
 P-TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	42	14	80	xx

Coding:	B12	B13	B14
Hex	xx	xx	00

7.2.4 Void

7.2.5 UE updating the User controlled PLMN selector list for E-UTRAN

7.2.5.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of PLMNs may be performed by the subscriber.

7.2.5.2 Conformance requirement

The UE shall correctly replace the selected UPLMN in the User controlled PLMN selector list.

- TS 31.102 [4], clause 5.3.6 and 4.2.5.

7.2.5.3 Test purpose

To verify that the UE correctly updates the EF_{PLMNwACT}.

7.2.5.4 Method of test

7.2.5.4.1 Initial conditions

No USS/SS is required for this test.

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is powered on.

7.2.5.4.2 Procedure

- a) The user shall initiate an MMI dependent procedure to change the second UPLMN in the User controlled PLMN selector list to MCC/MNC of 567/04, the ACT identifier shall set to E-UTRAN only.
- b) The UE is soft powered down.

7.2.5.5 Acceptance criteria

After step b) the USIM shall contain the following values:

EF_{PLMNwACT} (UPLMN Selector)

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	E-UTRAN
	2 nd PLMN:	567 04
	2 nd ACT:	E-UTRAN
	3 rd PLMN:	244 083
	3 rd ACT:	E-UTRAN
	4 th PLMN:	244 082
	4 th ACT:	GSM
	5 th PLMN:	244 003
	5 th ACT:	E-UTRAN
	6 th PLMN:	244 004
	6 th ACT:	UTRAN
	7 th PLMN:	244 005
	7 th ACT:	UTRAN
	8 th PLMN:	244 081
	8 th ACT:	UTRAN
	9 th PLMN:	244 007
	9 th ACT:	UTRAN
	10 th PLMN:	244 008
	10 th ACT:	E-UTRAN
	11 th PLMN:	244 009
	11 th ACT:	UTRAN
	12 th PLMN:	244 010
	12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	65	F7	40	40	00	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60

42 84 00 40 00 42 94 00 80 00 42 04 10 40 00

7.2.6 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference- UTRAN/E-UTRAN

7.2.6.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.6.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.6.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN has to be handled correctly by the UE.

7.2.6.4 Method of test

7.2.6.4.1 Initial conditions

For this test both a UTRAN USS and an E-UTRAN E-USS is needed.

The USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/004/0001.
- Access control: unrestricted.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/003/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.6.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/003, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.

- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/003/ 0001

GUTI: "24400300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- e) The UE is soft powered down.

7.2.6.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/003 to the E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24400300010266436587
 Last visited registered TAI: 244/003/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	00	00	01	00				

7.2.7 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference- GSM/E-UTRAN

7.2.7.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.7.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.7.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN has to be handled correctly by the UE.

7.2.7.4 Method of test

7.2.7.4.1 Initial conditions

For this test both a GSM SS and an E-UTRAN E-USS is needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- Access control: unrestricted.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.7.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/083, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/083/ 0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- e) The UE is soft powered down.

7.2.7.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the e-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.8 UE recognising the priority order of the User controlled PLMN selector list with the same access technology – E-UTRAN in NB-S1 mode

7.2.8.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.8.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.8.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.2.8.4 Method of test

7.2.8.4.1 Initial conditions

For this test 2 NB-IoT-cells are needed.

The NB-SS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used, with the following exception:

EFPLMNwACT (User Controlled PLMN Selector with Access Technology)

Logically:	1 st PLMN:	244 083 (MCC MNC)
	1 st ACT:	E-UTRAN in NB-S1mode
	2 nd PLMN:	244 081
	2 nd ACT:	E-UTRAN in NB-S1 mode
	3 rd PLMN:	244 083
	3 rd ACT:	E-UTRAN
	4 th PLMN:	244 082
	4 th ACT:	GSM
	5 th PLMN:	244 003
	5 th ACT:	E-UTRAN
	6 th PLMN:	244 004
	6 th ACT:	UTRAN
	7 th PLMN:	244 005

7th ACT: UTRAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	34	80	50	00	42	14	80	50	00	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.8.2 Procedure

- The UE is powered on.
- After receipt of an *RRConnectionRequest-NB* from the UE on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083, the NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the NB-SS.
- During registration and after receipt of a *AttachRequest* from the UE, the NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/083/ 0001

GUTI: "24408300010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the NB-SS sends *RRConnectionRelease-NB*.
- The UE is powered down.

7.2.8.5 Acceptance criteria

- After step a) the UE shall send a *RRConnectionRequest-NB* on the NB-IoT -cell related to the BCCH transmitting MCC/MNC 244/083 to the NB-SS.
- After step b) the terminal shall send *AttachRequest* to the NB-SS.
- After step c) the terminal shall respond with *AttachComplete* during registration.
- After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65

B12	B13	B14	B15	B16	B17	B18				
87	42	34	80	00	01	00				

7.2.9 UE recognising the priority order of the User controlled PLMN selector list using the ACT preference – E-UTRAN in WB-S1/E-UTRAN in NB-S1

7.2.9.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.9.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.9.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN in WB-S1 mode and E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.2.9.4 Method of test

7.2.9.4.1 Initial conditions

For this test both an E-USS and NB-SS are needed.

The E-USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- TAI (MCC/MNC/LAC):244/083/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	E-UTRAN
	2 nd PLMN:	244 081
	2 nd ACT:	GSM
	3 rd PLMN:	244 083
	3 rd ACT:	E-UTRAN in NB-S1 mode
	4 th PLMN:	244 083

4th ACT: E-UTRAN in WB-S1 mode
 5th PLMN: 244 003
 5th ACT: E-UTRAN
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	50	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	34	80	60	00	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.9.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRCCConnectionRequest-NB* from the UE on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083, the NB-SS sends *RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the NB-SS.
- During registration and after receipt of a *AttachRequest* from the UE, the NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/083/ 0001

GUTI: "24408300010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the NB-SS sends *RRCCConnectionRelease-NB*.
- The UE is soft powered down.

7.2.9.5 Acceptance criteria

- After step a) the UE shall send a *RRCCConnectionRequest-NB* on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083 to the NB-SS.
- After step b) the terminal shall send *AttachRequest* to the NB-SS.
- After step c) the terminal shall respond with *AttachComplete* during registration.

4) After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.10 UE updating the User controlled PLMN selector list for satellite-NG-RAN

7.2.10.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of PLMNs may be performed by the subscriber.

7.2.10.2 Conformance requirement

The UE shall correctly replace the selected UPLMN in the User controlled PLMN selector list.

- TS 31.102 [4], clause 5.3.6 and 4.2.5.

7.2.10.3 Test purpose

To verify that the UE correctly updates the EF_{PLMNwACT}.

7.2.10.4 Method of test

7.2.10.4.1 Initial conditions

No SAT-NG-SS is required for this test.

The default 5G-NR UICC is used.

The UICC is installed into the Terminal and the UE is powered on.

7.2.10.4.2 Procedure

- The user shall initiate an MMI dependent procedure to change the second UPLMN in the User controlled PLMN selector list to MCC/MNC of 567/004, the ACT identifier shall set to satellite NG-RAN only.
- The UE is soft powered down.

7.2.10.5 Acceptance criteria

After step b) the USIM shall contain the following values:

EF_{PLMNwACT} (UPLMN Selector)

Logically: 1st PLMN: 244 081 (MCC MNC)
 1st ACT: E-UTRAN
 2nd PLMN: 567 004

2nd ACT: satellite NG-RAN
 3rd PLMN: 244 083
 3rd ACT: satellite NG-RAN
 4th PLMN: 244 082
 4th ACT: GSM
 5th PLMN: 244 003
 5th ACT: satellite NG-RAN
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: NG-RAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	65	47	00	04	00	42	34	80	04	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	04	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	08	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

7.2.11 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference GSM/satellite NG-RAN

7.2.11.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.11.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.11.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite NG-RAN has to be handled correctly by the UE.

7.2.11.4 Method of test

7.2.11.4.1 Initial conditions

For this test both a GSM SS and a SAT-NG-SS is needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- Access control: unrestricted.

The SAT-NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.11.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCRequest* from the UE on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT with to the UE:

TAI (MCC/MNC/TAC):244/083/000001

5G-GUTI:"24408300010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.2.11.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the SAT-NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:
MCC: 244
MNC: 083
AMF Region ID: 0
AMF Set ID: 4

AMF Pointer: 2
 5G-TMSI: 66 43 65 87
 Last visited registered TAI in 5GS for 3GPP access: 244 083 000001
 5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.2.12 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference UTRAN/satellite NG-RAN

7.2.12.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.12.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.12.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite NG-RAN has to be handled correctly by the UE.

7.2.12.4 Method of test

7.2.12.4.1 Initial conditions

For this test both an UTRAN USS and a SAT- NG-SS is needed.

The USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/004/0001.
- Access control: unrestricted.

The SAT-NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.12.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCRequest* from the UE on the satellite NG-RAN cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT with to the UE:

TAI (MCC/MNC/TAC):244/083/000001

5G-GUTI:"24408300010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.2.12.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the SAT-NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOCI (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.2.13 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN/satellite NG-RAN

7.2.13.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.13.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.13.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite NG-RAN has to be handled correctly by the UE.

7.2.13.4 Method of test

7.2.13.4.1 Initial conditions

For this test both an E-USS and a SAT-NG-SS is needed.

The E-USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/008/0001.
- Access control: unrestricted.

The SAT-NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.13.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRCRequest* from the UE on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT with to the UE:

TAI (MCC/MNC/TAC):244/083/000001

5G-GUTI:"24408300010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.2.13.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the SAT-NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOCi (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.2.14 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference NG-RAN/satellite NG-RAN

7.2.14.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.14.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.14.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite NG-RAN has to be handled correctly by the UE.

7.2.14.4 Method of test

7.2.14.4.1 Initial conditions

For this test both a NG-SS and a SAT-NG-SS is needed.

The SAT-NG-SS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The NG-SS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.2.14.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCRequest* from the UE on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT with to the UE:

TAI (MCC/MNC/TAC):244/083/000001

5G-GUTI:"24408300010266436587"
- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.2.14.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the SAT-NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244
 MNC: 083
 AMF Region ID: 0
 AMF Set ID: 4
 AMF Pointer: 2
 5G-TMSI: 66 43 65 87
 Last visited registered TAI in 5GS for 3GPP access: 244 083 000001
 5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.2.15 UE updating the User controlled PLMN selector list for Satellite-E-UTRAN in NB-S1 mode

7.2.15.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of PLMNs may be performed by the subscriber.

7.2.15.2 Conformance requirement

The UE shall correctly replace the selected UPLMN in the User controlled PLMN selector list.

- TS 31.102 [4], clause 5.3.6 and 4.2.5.

7.2.15.3 Test purpose

To verify that the UE correctly updates the EF_{PLMNwACT}.

7.2.15.4 Method of test

7.2.15.4.1 Initial conditions

No NB-SS/SAT-NB-SS is required for this test.

The default E-UTRAN UICC is used with the following exception.

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in NB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in NB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN

8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is powered on.

7.2.15.4.2 Procedure

- a) The user shall initiate an MMI dependent procedure to change the second UPLMN in the User controlled PLMN selector list to MCC/MNC of 567/04, the ACT identifier shall set to satellite E-UTRAN in NB-S1 mode only.
- b) The UE is soft powered down.

7.2.15.5 Acceptance criteria

After step b) the USIM shall contain the following values:

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1st PLMN: 244 081 (MCC MNC)
 1st ACT: E-UTRAN
 2nd PLMN: 567 04
 2nd ACT: satellite E-UTRAN in NB-S1 mode
 3rd PLMN: 244 083
 3rd ACT: satellite E-UTRAN in NB-S1 mode
 4th PLMN: 244 082
 4th ACT: GSM
 5th PLMN: 244 003
 5th ACT: satellite E-UTRAN in NB-S1 mode
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15

Hex	42	14	80	40	00	65	F7	40	01	00	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

7.2.16 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference GSM/Satellite E-UTRAN in NB-S1 mode

7.2.16.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.16.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.16.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.2.16.4 Method of test

7.2.16.4.1 Initial conditions

For this test both a GSM SS and a SAT-NB-SS are needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- Access control: unrestricted.

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

EF_{PLMNwACT} (UPLMN Selector)

Logically: 1st PLMN: 244 081 (MCC MNC)

1st ACT: E-UTRAN
 2nd PLMN: 244 081
 2nd ACT: GSM
 3rd PLMN: 244 083
 3rd ACT: satellite E-UTRAN in NB-S1 mode
 4th PLMN: 244 082
 4th ACT: GSM
 5th PLMN: 244 003
 5th ACT: satellite E-UTRAN in NB-S1 mode
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.16.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRConnectionRelease-NB*.
- e) The UE is soft powered down.

7.2.16.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the e-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.17 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference UTRAN/Satellite E-UTRAN in NB-S1 mode

7.2.17.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.17.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.17.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.2.17.4 Method of test

7.2.17.4.1 Initial conditions

For this test both a UTRAN USS and a SAT-NB-SS are needed.

The USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/004/0001.
- Access control: unrestricted.

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/003/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in NB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in NB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.17.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/003, the E-USS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/003/0001

GUTI: "24400300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRCConnectionRelease-NB*.
- e) The UE is soft powered down.

7.2.17.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/003 to the SAT-NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24400300010266436587
 Last visited registered TAI: 244/003/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	00	00	01	00				

7.2.18 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN/Satellite E-UTRAN in NB-S1 mode

7.2.18.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.18.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.18.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.2.18.4 Method of test

7.2.18.4.1 Initial conditions

For this test both an E-USS and a SAT-NB-SS is needed.

The E-USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/008/0001.
- Access control: unrestricted.

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in NB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in NB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.18.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRConnectionRelease-NB*.
- e) The UE is powered down.

7.2.18.5 Acceptance criteria

- 1) After step a) the UE shall send a *RRConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
Last visited registered TAI: 244/083/0001
EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.19 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN in NB-S1 mode/Satellite E-UTRAN in NB-S1 mode

7.2.19.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.19.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.19.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMN_{wACT}}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.2.19.4 Method of test

7.2.19.4.1 Initial conditions

For this test both an NB-SS and a SAT-NB-SS is needed.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/007/0001.
- Access control: unrestricted.

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

$EF_{PLMN_{wACT}}$ (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in NB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in NB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	E-UTRAN in NB-S1 mode
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	08	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.19.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRConnectionRelease-NB*.
- e) The UE is powered down.

7.2.19.5 Acceptance criteria

- 1) After step a) the UE shall send a *RRConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOCi} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.20 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference NG-RAN/Satellite E-UTRAN in NB-S1 mode

7.2.20.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.20.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.20.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT NG-RAN and satellite E-UTRAN in NB-S1 mode mode has to be handled correctly by the UE.

7.2.20.4 Method of test

7.2.20.4.1 Initial conditions

For this test both a NG-SS and a SAT-NB-SS is needed.

The NG-SS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

$EF_{PLMNwACT}$ (UPLMN Selector)

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	E-UTRAN
	2 nd PLMN:	244 081
	2 nd ACT:	GSM
	3 rd PLMN:	244 083
	3 rd ACT:	satellite E-UTRAN in NB-S1 mode
	4 th PLMN:	244 082
	4 th ACT:	GSM
	5 th PLMN:	244 003
	5 th ACT:	satellite E-UTRAN in NB-S1 mode
	6 th PLMN:	244 004
	6 th ACT:	UTRAN
	7 th PLMN:	244 005
	7 th ACT:	NG-RAN
	8 th PLMN:	244 081
	8 th ACT:	UTRAN
	9 th PLMN:	244 007
	9 th ACT:	UTRAN
	10 th PLMN:	244 008
	10 th ACT:	E-UTRAN
	11 th PLMN:	244 009
	11 th ACT:	UTRAN
	12 th PLMN:	244 010
	12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	01	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	01	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	08	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.20.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRConnectionRelease-NB*.
- e) The UE is soft powered down.

7.2.20.5 Acceptance criteria

- 1) After step a) the UE shall send a *RRConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.21 UE updating the User controlled PLMN selector list for Satellite-E-UTRAN in WB-S1 mode

7.2.21.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred UPLMNs on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of PLMNs may be performed by the subscriber.

7.2.21.2 Conformance requirement

The UE shall correctly replace the selected UPLMN in the User controlled PLMN selector list.

- TS 31.102 [4], clause 5.3.6 and 4.2.5.

7.2.21.3 Test purpose

To verify that the UE correctly updates the EF_{PLMNwACT}.

7.2.21.4 Method of test

7.2.21.4.1 Initial conditions

No E-USS/SAT-E-USS is required for this test.

The default E-UTRAN UICC is used with the following exception.

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in WB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in WB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	02	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	02	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00

B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is powered on.

7.2.21.4.2 Procedure

- a) The user shall initiate an MMI dependent procedure to change the second UPLMN in the User controlled PLMN selector list to MCC/MNC of 567/04, the ACT identifier shall set to satellite E-UTRAN in WB-S1 mode only.
- b) The UE is soft powered down.

7.2.21.5 Acceptance criteria

After step b) the USIM shall contain the following values:

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	567 04
2 nd ACT:	satellite E-UTRAN in WB-S1 mode
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in WB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in WB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	UTRAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	65	F7	40	02	00	42	34	80	02	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	02	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

7.2.22 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference GSM/Satellite E-UTRAN in WB-S1 mode

7.2.22.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{PLMNwACT}$. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.22.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.22.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.2.22.4 Method of test

7.2.22.4.1 Initial conditions

For this test both a GSM SS and a SAT-E-USS are needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- Access control: unrestricted.

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

$EF_{PLMNwACT}$ (UPLMN Selector)

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	E-UTRAN
	2 nd PLMN:	244 081
	2 nd ACT:	GSM
	3 rd PLMN:	244 083
	3 rd ACT:	satellite E-UTRAN in WB-S1 mode
	4 th PLMN:	244 082
	4 th ACT:	GSM
	5 th PLMN:	244 003
	5 th ACT:	satellite E-UTRAN in WB-S1 mode

6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	02	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	02	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.22.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRCCConnectionRequest* from the UE on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRCCConnectionRelease*.
- The UE is soft powered down.

7.2.22.5 Acceptance criteria

- After step a) the UE shall send a *RRCCConnectionRequest* on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the e-USS.
- After step b) the terminal shall send *AttachRequest* to the SAT-E-USS.
- After step c) the terminal shall respond with *AttachComplete* during registration.
- After step) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001

EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.23 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference UTRAN/Satellite E-UTRAN in WB-S1 mode

7.2.23.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{PLMNwACT}$. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.23.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.23.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.2.23.4 Method of test

7.2.23.4.1 Initial conditions

For this test both a UTRAN USS and a SAT-E-USS are needed.

The USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/004/0001.
- Access control: unrestricted.

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/003/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception.

$EF_{PLMNwACT}$ (UPLMN Selector)

Logically: 1st PLMN: 244 081 (MCC MNC)

1st ACT: E-UTRAN
 2nd PLMN: 244 081
 2nd ACT: GSM
 3rd PLMN: 244 083
 3rd ACT: satellite E-UTRAN in WB-S1 mode
 4th PLMN: 244 082
 4th ACT: GSM
 5th PLMN: 244 003
 5th ACT: satellite E-UTRAN in WB-S1 mode
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	02	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	02	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.23.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRCCConnectionRequest* from the UE on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/003, the E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/003/0001

GUTI: "24400300010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRCCConnectionRelease*.
- The UE is soft powered down.

7.2.23.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCConnectionRequest* on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/003 to the SAT-E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24400300010266436587
 Last visited registered TAI: 244/003/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	00	00	01	00				

7.2.24 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference E-UTRAN/Satellite E-UTRAN in WB-S1 mode

7.2.24.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.24.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.24.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.2.24.4 Method of test

7.2.24.4.1 Initial conditions

For this test both an E-USS and a SAT-E-USS is needed.

The E-USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/008/0001.
- Access control: unrestricted.

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

EF_{PLMNwACT} (UPLMN Selector)

Logically:	1 st PLMN:	244 081 (MCC MNC)
	1 st ACT:	E-UTRAN
	2 nd PLMN:	244 081
	2 nd ACT:	GSM
	3 rd PLMN:	244 083
	3 rd ACT:	satellite E-UTRAN in WB-S1 mode
	4 th PLMN:	244 082
	4 th ACT:	GSM
	5 th PLMN:	244 003
	5 th ACT:	satellite E-UTRAN in WB-S1 mode
	6 th PLMN:	244 004
	6 th ACT:	UTRAN
	7 th PLMN:	244 005
	7 th ACT:	UTRAN
	8 th PLMN:	244 081
	8 th ACT:	UTRAN
	9 th PLMN:	244 007
	9 th ACT:	UTRAN
	10 th PLMN:	244 008
	10 th ACT:	E-UTRAN
	11 th PLMN:	244 009
	11 th ACT:	UTRAN
	12 th PLMN:	244 010
	12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	02	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	02	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.24.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRCConnectionRelease*.
- e) The UE is powered down.

7.2.24.5 Acceptance criteria

- 1) After step a) the UE shall send a *RRCConnectionRequest* on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.2.25 UE recognising the priority order of the User controlled PLMN selector list using an ACT preference NG-RAN/Satellite E-UTRAN in WB-S1 mode

7.2.25.1 Definition and applicability

The User controlled PLMN selector list gives in priority order the preferred PLMNs of the User on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}. Update and deletion of User controlled PLMNs may be performed by the subscriber by the use of the PIN.

7.2.25.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of the ACT identifier in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clauses 4.2.5 and 5.1.1.2.

7.2.25.3 Test purpose

To verify that the ACT with the higher priority (defined by its position in EF_{PLMNwACT}) takes precedence over the UPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT NG-RAN and satellite E-UTRAN in WB-S1 mode mode has to be handled correctly by the UE.

7.2.25.4 Method of test

7.2.25.4.1 Initial conditions

For this test both a NG-SS and a SAT-E-USS is needed.

The NG-SS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

EF_{PLMNwACT} (UPLMN Selector)

Logically:

1 st PLMN:	244 081 (MCC MNC)
1 st ACT:	E-UTRAN
2 nd PLMN:	244 081
2 nd ACT:	GSM
3 rd PLMN:	244 083
3 rd ACT:	satellite E-UTRAN in WB-S1 mode
4 th PLMN:	244 082
4 th ACT:	GSM
5 th PLMN:	244 003
5 th ACT:	satellite E-UTRAN in WB-S1 mode
6 th PLMN:	244 004
6 th ACT:	UTRAN
7 th PLMN:	244 005
7 th ACT:	NG-RAN
8 th PLMN:	244 081
8 th ACT:	UTRAN
9 th PLMN:	244 007
9 th ACT:	UTRAN
10 th PLMN:	244 008
10 th ACT:	E-UTRAN
11 th PLMN:	244 009
11 th ACT:	UTRAN
12 th PLMN:	244 010
12 th ACT:	E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	02	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	02	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	08	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.2.25.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCConnectionRequest* from the UE on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-E-USS sends *RRCConnectionSetup* to the UE, followed by *RRCConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/083/0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRCConnectionRelease*.
- e) The UE is soft powered down.

7.2.25.5 Acceptance criteria

- 1) After step a) the UE shall send a *RRCConnectionRequest* on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.3 Operator controlled PLMN selector handling

7.3.1 UE recognising the priority order of the Operator controlled PLMN selector list.

7.3.1.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMN_{WACT}}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

The registration attempts initiated by the UE accessing UTRAN depends on UE's capabilities and can be one of the following:

- I. registration procedures for Ues supporting CS or
- II. registration procedures for Ues supporting PS or

III. registration procedures for Ues supporting CS/PS

7.3.1.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53.

7.3.1.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in $EF_{OPLMN_{wACT}}$) takes precedence over the OPLMN with the lower priority when the UE performs a network selection.

7.3.1.4 Method of test

7.3.1.4.1 Initial conditions

For this test a USS (in case of a Terminal accessing UTRAN) or a SS (in case of a Terminal accessing a GERAN) is needed.

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing a GERAN) transmits on two BCCHs, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 254/011/0001.
- RAI (MCC/MNC/LAC/RAC): 254/011/0001/05 (for UTRAN cell only).
- Access control: unrestricted.
- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 254/012/0001.
- RAI (MCC/MNC/LAC/RAC): 254/012/0001/05 (for UTRAN cell only).
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted.

The default UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- Operator controlled PLMN selector available

Coding:	B1	B2	B3	B4	B5	B6
binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{OPLMNwACT} (OPLMN Selector)

Logically:

- 1st PLMN: 254 012 (MCC MNC)
- 1st ACT: UTRAN
- 2nd PLMN: 254 011
- 2nd ACT: UTRAN
- 3rd PLMN: 254 002
- 3rd ACT: UTRAN
- 4th PLMN: 254 012
- 4th ACT: GSM
- 5th PLMN: 254 011
- 5th ACT: GSM
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	24	10	80	00	52	14	10	80	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	80	00	52	24	10	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	14	10	00	80	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.3.1.4.2 Procedure

Expected Sequence A:

- a) The UE is powered on.
- b) After receipt on the cell related to the BCCH transmitting MCC/MNC 254/012 of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- c) Depending on which domain the UE is going to be registered on, one of the following requirements should be fulfilled:
 - I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT to the UE with the following values:

LAI (MCC/MNC/LAC): 254/012/0001

TMSI: "34567890"

- II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT to the UE with following values:

RAI (MCC/MNC/LAC/RAC) 254/012/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

- III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT to the UE with some of the following values:

LAI (MCC/MNC/LAC):254/012/0001

TMSI: "34567890"

RAI (MCC/MNC/LAC/RAC) 254/012/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

- d) After receipt of a

- I. TMSI REALLOCATION COMPLETE during registration on CS from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- II. ATTACH COMPLETE during registration on PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE during registration on CS/PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

- e) The UE is soft powered down.

Expected Sequence B:

- a) The UE is powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):254/012/0001

TMSI: "34567890"

to the UE.

- d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The UE is soft powered down.

7.3.1.5 Acceptance criteria

- 1) After step a) the UE accessing a GERAN shall send CHANNEL REQUEST on the cell related to the BCCH transmitting MCC/MNC 254/012 to the SS and the UE accessing UTRAN shall send an RRC CONNECTION REQUEST on the cell related to the BCCH transmitting MCC/MNC 254/012 to the USS.
- 2) After step b) the UE accessing a GERAN shall send LOCATION UPDATING REQUEST to the SS and the UE accessing UTRAN shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST. To the USS during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.

3) After step c) the UE accessing GERAN shall respond with TMSI REALLOCATION COMPLETE and the UE accessing UTRAN shall respond with

- I. TMSI REALLOCATION COMPLETE during registration on CS or
- II. ATTACH COMPLETE during registration on PS or
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE to the USS during registration on CS/PS.

4) After step e) the USIM shall contain the following values:

For UEs accessing GERAN and UEs accessing UTRAN and supporting (CS and PS) or (CS only):

EF_{LOC} (Location Information)

Logically: LAI-MCC: 254
LAI-MNC: 012
TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	52	24	10	xx	xx	xx	00

For UEs supporting (CS and PS) or (PS only):

EF_{PSLOC} (Location Information)

Logically: RAI-MCC: 254
RAI-MNC: 012
P-TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	52	24	10	xx

Coding:	B12	B13	B14
Hex	xx	xx	00

7.3.2 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list.

7.3.2.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}.

The registration attempts initiated by the terminal accessing UTRAN depends on terminal's capabilities and can be one of the following:

- I. registration procedures for Ues supporting CS or
- II. registration procedures for Ues supporting PS or
- III. registration procedures for Ues supporting CS/PS

7.3.2.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;

- TS 31.102 [4], clauses 4.2.5 and 4.2.53.

7.3.2.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the OPLMN with a higher priority when the UE performs a network selection.

7.3.2.4 Method of test

7.3.2.4.1 Initial conditions

For this test a USS (in case of a Terminal accessing UTRAN) or a SS (in case of a Terminal accessing a GERAN) is needed.

The USS (in case of a Terminal accessing UTRAN)/ SS (in case of a Terminal accessing a GERAN) transmits on two BCCHs, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 254/001/0001.
- RAI (MCC/MNC/LAC/RAC): 254/001/0001/05 (only for UTRAN cell).
- Access control: unrestricted.
- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/010/0001.
- RAI (MCC/MNC/LAC/RAC): 244/010/0001/05 (only for UTRAN cell).
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted

The default UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available
User controlled PLMN selector available
Fixed dialling numbers available
Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
Service n 33 (Packed Switched Domain) shall be set to '1'
Enabled Services Table available
Operator controlled PLMN selector available

Coding:	B1	B2	B3	B4	B5	B6
binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

$EF_{PLMNwACT}$ (UPLMN Selector with Access Technology)

Logically: 1st PLMN: 244 081 (MCC MNC)
1st ACT: UTRAN
2nd PLMN: 244 081
2nd ACT: GSM
3rd PLMN: 244 082
3rd ACT: UTRAN
4th PLMN: 244 082
4th ACT: GSM

5th PLMN: 244 003
 5th ACT: UTRAN
 6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: UTRAN
 8th PLMN: 244 006
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: UTRAN
 11th PLMN: 244 010
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: GSM

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	80	00	42	14	80	00	80	42	24	80	80	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	24	00	80	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	64	00	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	80	00	42	04	10	80	00	42	04	10	00	80

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.3.2.4.2 Procedure

Expected Sequence A:

- a) The UE is powered on.
- b) After receipt of a RRC CONNECTION REQUEST from the UE on the cell related to the BCCH transmitting MCC/MNC 244/010, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.

- c) Depending on which domain the UE is going to be registered on, one of the following requirements should be fulfilled:

- I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT to the UE with the following values:

LAI (MCC/MNC/LAC): 244/010/0001

TMSI: "34567890"

- II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT with the following values:

RAI (MCC/MNC/LAC/RAC) 244/010/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT with some of the following values :

LAI (MCC/MNC/LAC): 244/010/0001

TMSI: "34567890"

RAI (MCC/MNC/LAC/RAC) 244/010/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"

d) After receipt of a

- I. TMSI REALLOCATION COMPLETE during registration on CS from the UE, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- II. ATTACH COMPLETE during registration on PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE during registration on CS/PS from the UE, the USS sends RRC CONNECTION RELEASE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.

e) The UE is soft powered down.

Expected Sequence B:

- a) The UE is powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):244/010/0001

TMSI: "34567890"

to the UE.

- d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The UE is soft powered down.

7.3.2.5 Acceptance criteria

- 1) After step a) the UE accessing a GERAN shall send CHANNEL REQUEST on the cell related to the BCCH transmitting MCC/MNC 244/010 to the SS and the UE accessing UTRAN shall send an RRC CONNECTION REQUEST on the cell related to the BCCH transmitting MCC/MNC 244/010 to the USS.
- 2) After step b) the UE accessing a GERAN shall send LOCATION UPDATING REQUEST to the SS and the UE accessing UTRAN shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.
- 3) After step c) the UE accessing GERAN shall respond with TMSI REALLOCATION COMPLETE and the UE accessing UTRAN shall respond with

- I. TMSI REALLOCATION COMPLETE during registration on CS or
- II. ATTACH COMPLETE during registration on PS or
- III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE to the USS during registration on CS/PS..

4) After step e) the USIM shall contain the following values:

For UEs accessing GERAN and UEs accessing UTRAN and supporting (CS and PS) or (CS only):

EF_{LOCi} (Location Information)

Logically: LAI-MCC: 244
 LAI-MNC: 010
 TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
	34	56	78	90	42	04	10	xx	xx	xx	00

For UEs supporting (CS and PS) or (PS only):

EF_{PSLOCi} (Location Information)

Logically: RAI-MCC: 244
 RAI-MNC: 010
 P-TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	42	04	10	xx

Coding:	B12	B13	B14
Hex	xx	xx	00

7.3.3 UE recognising the priority order of the Operator controlled PLMN selector list when accessing E-UTRAN

7.3.3.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMN_{WACT}}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.3.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53, 4.2.5 and 5.1.1.2.

7.3.3.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMN_{WACT}}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN/NB-IoT has to be handled correctly by the UE.

7.3.3.4 Method of test

7.3.3.4.1 Initial conditions

For this test an E-USS/NB-SS is required.

The E-USS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/011/0001.
- Access control: unrestricted.

- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The NB-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/011/0001.
- Access control: unrestricted.

- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- Operator controlled PLMN selector available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx01 xxxx					

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{OPLMNwACT} (OPLMN Selector)

Logically:

- 1st PLMN: 254 012 (MCC MNC)
- 1st ACT E-UTRAN
- 2nd PLMN: 254 011
- 2nd ACT E-UTRAN
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 012
- 4th ACT: GSM

5th PLMN: 254 011
 5th ACT: GSM
 6th PLMN: 254 005
 6th ACT: UTRAN
 7th PLMN: 254 006
 7th ACT: UTRAN
 8th PLMN: 254 007
 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	24	10	40	00	52	14	10	40	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	24	10	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	14	10	00	80	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.3.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRCCConnectionRequest/RRCCConnectionRequest-NB* from the UE on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 254/012, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- During registration and after receipt of a *AttachRequest* from the UE, the E-USS/NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):254/012/ 0001

GUTI: "25401200010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB*.
- The UE is soft powered down.

7.3.3.5 Acceptance criteria

- After step a) the UE shall send a *RRCCConnectionRequest/RRCCConnectionRequest-NB* on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 254/012 to the E-USS/NB-SS.
- After step b) the terminal shall send *AttachRequest* to the E-USS/NB-SS.
- After step c) the terminal shall respond with *AttachComplete* during registration.
- After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 25401200010266436587
 Last visited registered TAI: 254/012/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	52	24	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	52	24	10	00	01	00				

7.3.4 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – E-UTRAN

7.3.4.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the $EF_{PLMNwACT}$.

7.3.4.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;
- TS 31.102 [4], clauses 4.2.5, 4.2.53 and 5.1.1.2.

7.3.4.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in $EF_{PLMNwACT}$) takes precedence over the OPLMN with a higher priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN/NB-IoT has to be handled correctly by the UE.

7.3.4.4 Method of test

7.3.4.4.1 Initial conditions

For this test an E-USS/NB-SS is required.

The E-USS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.

- TAI (MCC/MNC/TAC): 244/010/0001.
- Access control: unrestricted.

The NB-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.

- TAI (MCC/MNC/TAC): 244/010/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available
 User controlled PLMN selector available
 Fixed dialling numbers available

Barred dialling numbers available
 The GSM Access available
 The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 Operator controlled PLMN selector available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx01 xxxx					

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.4.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRCCConnectionRequest/RRCCConnectionRequest-NB* from the UE on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/010, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- During registration and after receipt of a *AttachRequest* from the UE, the E-USS/NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/010/ 0001

GUTI: "24401000010266436587"

- After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB*.
- The UE is soft powered down.

7.3.4.5 Acceptance criteria

- After step a) the UE shall send a *RRCCConnectionRequest/RRCCConnectionRequest-NB* on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/010 to the E-USS/NB-SS.
- After step b) the terminal shall send *AttachRequest* to the E-USS/NB-SS.
- After step c) the terminal shall respond with *AttachComplete* during registration.
- After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24401000010266436587
 Last visited registered TAI: 244/010/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	04	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	04	10	00	01	00				

7.3.5 UE recognising the priority order of the Operator controlled PLMN selector list when accessing E-UTRAN in NB-S1 mode

7.3.5.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMN_{WACT}}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.5.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53, 4.2.5 and 5.1.1.2.

7.3.5.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMN_{WACT}}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN in NB-IoT mode has to be handled correctly by the UE.

7.3.5.4 Method of test

7.3.5.4.1 Initial conditions

For this test a NB-SS is required.

The NB-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/011/0001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- Operator controlled PLMN selector available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x	xxxx xxxx	xxxx xxxx

B9	B10	B11
xxxx xxxx	xxxx xxxx	xx01 xxxx

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{OPLMNwACT} (OPLMN Selector)

Logically:

- 1st PLMN: 254 012 (MCC MNC)
- 1st ACT: E-UTRAN in NB-S1 mode
- 2nd PLMN: 254 011
- 2nd ACT: E-UTRAN in NB-S1 mode
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 012
- 4th ACT: GSM
- 5th PLMN: 254 011
- 5th ACT: GSM
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	24	10	50	00	52	14	10	50	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	24	10	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	14	10	00	80	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.5.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCCConnectionRequest-NB* from the UE on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 254/012, the NB-SS sends *RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the NB-SS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):254/012/ 0001

GUTI: "25401200010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the NB-SS sends *RRCCConnectionRelease-NB*.
- e) The UE is soft powered down.

7.3.5.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest-NB* on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 254/012 to the NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.

4) After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 25401200010266436587
 Last visited registered TAI: 254/012/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	52	24	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	52	24	10	00	01	00				

7.3.6 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – E-UTRAN in NB-S1 mode

7.3.6.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}.

7.3.6.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;
- TS 31.102 [4], clauses 4.2.5, 4.2.53 and 5.1.1.2.

7.3.6.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in EF_{PLMNwACT}) takes precedence over the OPLMN with a higher priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN in NB-IoT mode has to be handled correctly by the UE.

7.3.6.4 Method of test

7.3.6.4.1 Initial conditions

For this test a NB-SS is required.

The NB-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 244/010/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- Operator controlled PLMN selector available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx01 xxxx					

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 244 081 (MCC MNC)
- 1st ACT: E-UTRAN
- 2nd PLMN: 244 081
- 2nd ACT: GSM
- 3rd PLMN: 244 083
- 3rd ACT: E-UTRAN
- 4th PLMN: 244 082
- 4th ACT: GSM
- 5th PLMN: 244 003
- 5th ACT: E-UTRAN
- 6th PLMN: 244 004
- 6th ACT: UTRAN
- 7th PLMN: 244 005
- 7th ACT: UTRAN
- 8th PLMN: 244 081
- 8th ACT: UTRAN
- 9th PLMN: 244 007
- 9th ACT: UTRAN
- 10th PLMN: 244 008
- 10th ACT: E-UTRAN
- 11th PLMN: 244 009
- 11th ACT: UTRAN
- 12th PLMN: 244 010
- 12th ACT: E-UTRAN in NB-S1 mode

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	50	00

EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 254 001 (MCC MNC)
- 1st ACT: E-UTRAN in NB-S1 mode
- 2nd PLMN: 254 001
- 2nd ACT: GSM
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 003
- 4th ACT: E-UTRAN
- 5th PLMN: 254 004
- 5th ACT: UTRAN
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	50	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	34	00	40	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

7.3.6.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCCConnectionRequest-NB* from the UE on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/010, the NB-SS sends *RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the NB-SS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/010/ 0001

GUTI: "24401000010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the NB-SS sends *RRCCConnectionRelease-NB*.
- e) The UE is soft powered down.

7.3.6.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest-NB* on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/010 to the NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically:

- GUTI: 24401000010266436587
- Last visited registered TAI: 244/010/0001
- EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	04	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	04	10	00	01	00				

7.3.7 UE recognising the priority order of the Operator controlled PLMN selector list using the ACT preference - E-UTRAN in NB-S1/ E-UTRAN in WB-S1 mode

7.3.7.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMN_{WACT}}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.7.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53, 4.2.5 and 5.1.1.2.

7.3.7.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMN_{WACT}}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN in NB-IoT mode and E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.3.7.4 Method of test

7.3.7.4.1 Initial conditions

For this test an E-USS and NB-SS is required.

The E-USS transmits on BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The NB-SS transmits on BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

- Logically:
- Local Phone Book available
 - User controlled PLMN selector available
 - Fixed dialling numbers available
 - Barred dialling numbers available
 - The GSM Access available

The Group Identifier level 1 and level 2 not available
 Service n 33 (Packed Switched Domain) shall be set to '1'
 Enabled Services Table available
 Operator controlled PLMN selector available
 EPS Mobility Management Information available
 Allowed CSG Lists and corresponding indications not available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx01 xxxx					

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{OPLMNwACT} (OPLMN Selector)

Logically:

- 1st PLMN: 254 012 (MCC MNC)
- 1st ACT E-UTRAN in NB-S1 mode
- 2nd PLMN: 254 012
- 2nd ACT E-UTRAN in WB-S1 mode
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 012
- 4th ACT: GSM
- 5th PLMN: 254 011
- 5th ACT: GSM
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	24	10	50	00	52	24	10	60	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	24	10	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	14	10	00	80	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.7.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest-NB* from the UE on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 254/012, the NB-SS sends *RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete-NB* sent by the UE to the NB-SS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):254/012/ 0001

GUTI: "25401200010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the NB-SS sends *RRConnectionRelease-NB*.

- e) The UE is soft powered down.

7.3.7.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest-NB* on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 254/012 to the NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 25401200010266436587
 Last visited registered TAI: 254/012/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	52	24	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	52	24	10	00	01	00				

7.3.8 UE recognising the priority order of the Operator controlled PLMN selector list using the ACT preference - E-UTRAN in NB-S1 mode/ GSM

7.3.8.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMNwACT}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.8.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53, 4.2.5 and 5.1.1.2.

7.3.8.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMNwACT}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.3.8.4 Method of test

7.3.8.4.1 Initial conditions

For this test both a GSM SS and an NB-IoT NB-SS are needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/083/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EFOPLMNwACT (Operator Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 254 001 (MCC MNC)
- 1st ACT: E-UTRAN
- 2nd PLMN: 254 001
- 2nd ACT: GSM
- 3rd PLMN: 244 083
- 3rd ACT: E-UTRAN in NB-S1 mode
- 4th PLMN: 244 083
- 4th ACT: GSM
- 5th PLMN: 254 004
- 5th ACT: UTRAN
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	40	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	42	34	80	50	00	42	34	80	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.8.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCCConnectionRequest-NB* from the UE on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083, the E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the NB-SS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/083/ 0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the NB-SS sends *RRCCConnectionRelease-NB*.
- e) The UE is soft powered down.

7.3.8.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest-NB* on the NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083 to the NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.3.9 UE recognising the priority order of the Operator controlled PLMN selector list using the ACT preference - E-UTRAN in WB-S1 mode/GSM

7.3.9.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMNwACT}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.9.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53, 4.2.5 and 5.1.1.2.

7.3.9.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMNwACT}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.3.9.4 Method of test

7.3.9.4.1 Initial conditions

For this test both a GSM SS and an E-UTRAN E-USS is needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/083/0001.
- Access control: unrestricted.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exception:

EFOPLMNwACT (Operator Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 254 001 (MCC MNC)
- 1st ACT: E-UTRAN
- 2nd PLMN: 254 001
- 2nd ACT: GSM
- 3rd PLMN: 244 083
- 3rd ACT: E-UTRAN in WB-S1 mode
- 4th PLMN: 244 083
- 4th ACT: GSM
- 5th PLMN: 254 004
- 5th ACT: UTRAN
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	40	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	42	34	80	60	00	42	34	80	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.9.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/083, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):244/083/ 0001

GUTI: "24408300010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- e) The UE is soft powered down.

7.3.9.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	34	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	34	80	00	01	00				

7.3.10 UE recognising the priority order of the Operator controlled PLMN selector list when accessing NG-RAN

7.3.10.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMNwACT}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.10.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53 and 5.1.1.2.

7.3.10.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMNwACT}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT NG-RAN has to be handled correctly by the UE.

7.3.10.4 Method of test

7.3.10.4.1 Initial conditions

For this test both a NG-SS and an E-USS are needed.

The NG-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/000001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 254/002/000001.
- Access control: unrestricted.

The E-USS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

	Service n°42:		Operator controlled PLMN selector with Access Technology				available	
Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx			

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.10.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCRequest* from the UE on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 254/001, the NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC): 254/001/000001
 5G-GUTI : "25400100010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.3.10.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 254/001 to the NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF_{5GS3GPPLOC1} (5GS 3GPP location information)

Logically:

5G-GUTI:
 MCC: 254
 MNC: 001
 AMF Region ID: 0
 AMF Set ID: 4
 AMF Pointer: 2
 5G-TMSI: 66 43 65 87
 Last visited registered TAI in 5GS for 3GPP access: 254 001 000001
 5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	52	14	00	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	52	14	00
	B17	B18	B19	B20				
	00	00	01	00				

7.3.11 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – NG-RAN

7.3.11.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}.

7.3.11.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;
- TS 31.102 [4], clauses 4.2.5, 4.2.53 and 5.1.1.2.

7.3.11.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in EF_{PLMNwACT}) takes precedence over the OPLMN with a higher priority when the UE performs a network selection. Hereby the new coding for RAT NG-RAN has to be handled correctly by the UE.

7.3.11.4 Method of test

7.3.11.4.1 Initial conditions

For this test an NG-SS is required.

The NG-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 254/001/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

	Service n°42:				Operator controlled PLMN selector with Access Technology				available
Coding:	B1	B2	B3	B4	B5	B6	B7	B8	
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx	
	B9	B10	B11	...	B16				
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx				

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.11.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCRequest* from the UE on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/005, the NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC):244/005/ 000001

5G-GUTI:"24400500010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.3.11.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/005 to the NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOCI (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 005

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 005 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	54	00	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	54	00
	B17	B18	B19	B20				
	00	00	01	00				

7.3.12 UE recognising the priority order of the Operator controlled PLMN selector list when accessing satellite NG-RAN

7.3.12.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMN_{WACT}}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.12.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53 and 5.1.1.2.

7.3.12.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in EF_{OPLMN_{WACT}}) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite NG-RAN has to be handled correctly by the UE.

7.3.12.4 Method of test

7.3.12.4.1 Initial conditions

For this test both an E-USS and a SAT-NG-SS are needed.

The SAT-NG-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/000001.
- Access control: unrestricted.

- TAI (MCC/MNC/TAC): 254/002/000001.
- Access control: unrestricted.

The E-USS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

	Service n°42:				Operator controlled PLMN selector with Access Technology				available	
Coding:	B1	B2	B3	B4	B5	B6	B7	B8		
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx		
	B9	B10	B11	...	B16					
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx					

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.12.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCRequest* from the UE on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 254/001, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC): 254/001/000001

5G-GUTI: "25400100010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.3.12.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 254/001 to the SAT-NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the SAT-NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOCI (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 254

MNC: 001

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 254 001 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	52	14	00	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	52	14	00
	B17	B18	B19	B20				
	00	00	01	00				

7.3.13 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – satellite NG-RAN

7.3.13.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}.

7.3.13.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;
- TS 31.102 [4], clauses 4.2.5, 4.2.53 and 5.1.1.2.

7.3.13.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in EF_{PLMNwACT}) takes precedence over the OPLMN with a higher priority when the UE performs a network selection. Hereby the new coding for RAT satellite NG-RAN has to be handled correctly by the UE.

7.3.13.4 Method of test

7.3.13.4.1 Initial conditions

For this test an SAT-NG-SS is required.

The SAT-NG-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 254/001/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°42:		Operator controlled PLMN selector with Access Technology					available	
Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx			

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.3.13.4.2 Procedure

- a) The UE is powered on.

- b) After receipt of a *RRCRequest* from the UE on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083, the SAT-NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the SAT-NG-SS.
- c) During registration and after receipt of a REGISTRATION REQUEST from the UE, the SAT-NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC):244/083/000001

5G-GUTI:"24408300010266436587"

- d) After receipt of the REGISTRATION COMPLETE during registration from the UE, the SAT-NG-SS sends *RRCRelease*.
- e) The UE is soft powered down.

7.3.13.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NG-SS.
- 2) After step b) the terminal shall send REGISTRATION REQUEST to the SAT-NG-SS.
- 3) After step c) the terminal shall respond with REGISTRATION COMPLETE during registration.
- 4) After step e) the USIM shall contain the following values:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.3.14 UE recognising the priority order of the Operator controlled PLMN selector list when accessing Satellite E-UTRAN in NB-S1 mode

7.3.14.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMN_WACT}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.14.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53 and 5.1.1.2.

7.3.14.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in $EF_{OPLMNwACT}$) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.3.14.4 Method of test

7.3.14.4.1 Initial conditions

For this test both an NB-SS and a SAT-NB-SS are needed.

The NB-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/011/0001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The SAT-NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°42: Operator controlled PLMN selector with Access Technology available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx			

$EF_{OPLMNwACT}$ (OPLMN Selector)

Logically:

- 1st PLMN: 254 012 (MCC MNC)
- 1st ACT: satellite E-UTRAN in NB-S1 mode
- 2nd PLMN: 254 011
- 2nd ACT: E-UTRAN
- 3rd PLMN: 254 012
- 3rd ACT: E-UTRAN in NB-S1 mode
- 4th PLMN: 254 012

4th ACT: GSM
 5th PLMN: 254 011
 5th ACT: GSM
 6th PLMN: 254 005
 6th ACT: UTRAN
 7th PLMN: 254 006
 7th ACT: UTRAN
 8th PLMN: 254 007
 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	24	10	01	00	52	14	10	40	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	10	50	00	52	24	10	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	14	10	00	80	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.3.14.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCCConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 254/012, the SAT-NB-SS sends *RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 254/012/0001

GUTI: "25401200010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRCCConnectionRelease-NB*.
- e) The UE is soft powered down.

7.3.14.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 254/012 to the SAT-NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 25401200010266436587
 Last visited registered TAI: 254/012/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	52	24	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	52	24	10	00	01	00				

7.3.15 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – Satellite E-UTRAN in NB-S1 mode

7.3.15.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}.

7.3.15.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;
- TS 31.102 [4], clauses 4.2.5, 4.2.53 and 5.1.1.2.

7.3.15.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in EF_{PLMNwACT}) takes precedence over the OPLMN with a higher priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in NB-S1 mode has to be handled correctly by the UE.

7.3.15.4 Method of test

7.3.15.4.1 Initial conditions

For this test an SAT-NB-SS is required.

The SAT-NB-SS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.
- TAI (MCC/MNC/TAC): 244/010/0001.
- Access control: unrestricted.
- System information combination 8 as defined in TS 36.508 [29] clause 8.1.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°42: Operator controlled PLMN selector with Access Technology available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx			

EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 244 081 (MCC MNC)
- 1st ACT: E-UTRAN
- 2nd PLMN: 244 081
- 2nd ACT: GSM
- 3rd PLMN: 244 083
- 3rd ACT: E-UTRAN
- 4th PLMN: 244 082
- 4th ACT: GSM
- 5th PLMN: 244 003
- 5th ACT: E-UTRAN
- 6th PLMN: 244 004
- 6th ACT: UTRAN
- 7th PLMN: 244 005
- 7th ACT: UTRAN
- 8th PLMN: 244 081
- 8th ACT: UTRAN
- 9th PLMN: 244 007
- 9th ACT: UTRAN
- 10th PLMN: 244 008
- 10th ACT: E-UTRAN
- 11th PLMN: 244 009
- 11th ACT: UTRAN
- 12th PLMN: 244 010
- 12th ACT: satellite E-UTRAN in NB-S1 mode

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	01	00

EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 254 001 (MCC MNC)
- 1st ACT: satellite E-UTRAN in NB-S1 mode
- 2nd PLMN: 254 001
- 2nd ACT: GSM
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 003
- 4th ACT: E-UTRAN
- 5th PLMN: 254 004
- 5th ACT: UTRAN
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	01	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	34	00	40	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00

B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.3.15.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCCConnectionRequest-NB* from the UE on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/010, the SAT-NB-SS sends *RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete-NB* sent by the UE to the SAT-NB-SS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-NB-SS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/010/0001

GUTI: "24401000010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-NB-SS sends *RRCCConnectionRelease-NB*.
- e) The UE is soft powered down.

7.3.15.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest-NB* on the satellite E-UTRAN in NB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/010 to the SAT-NB-SS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-NB-SS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24401000010266436587
 Last visited registered TAI: 244/010/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	04	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	04	10	00	01	00				

7.3.16 UE recognising the priority order of the Operator controlled PLMN selector list when accessing Satellite E-UTRAN in WB-S1 mode

7.3.16.1 Definition and applicability

The Operator controlled PLMN selector list gives in priority order the preferred OPLMNs on which the UE shall register if no network of the User controlled PLMN selector list is available. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{OPLMNwACT}. Update and deletion of OPLMNs shall not be possible by the subscriber by the use of the PIN.

7.3.16.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2;
- TS 31.102 [4], clause 4.2.53 and 5.1.1.2.

7.3.16.3 Test purpose

To verify that the OPLMN with the higher priority (defined by its position in $EF_{OPLMNwACT}$) takes precedence over the OPLMN with the lower priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.3.16.4 Method of test

7.3.16.4.1 Initial conditions

For this test both an E-USS and a SAT-E-USS are needed.

The E-USS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/011/0001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.

The SAT-E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/012/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used, with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°42: Operator controlled PLMN selector with Access Technology available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx			

$EF_{OPLMNwACT}$ (OPLMN Selector)

Logically:

- 1st PLMN: 254 012 (MCC MNC)
- 1st ACT: satellite E-UTRAN in WB-S1 mode
- 2nd PLMN: 254 011
- 2nd ACT: E-UTRAN
- 3rd PLMN: 254 012
- 3rd ACT: E-UTRAN in WB-S1 mode
- 4th PLMN: 254 012

4th ACT: GSM
 5th PLMN: 254 011
 5th ACT: GSM
 6th PLMN: 254 005
 6th ACT: UTRAN
 7th PLMN: 254 006
 7th ACT: UTRAN
 8th PLMN: 254 007
 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	24	10	02	00	52	14	10	40	00
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	10	60	00	52	24	10	00	80
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	14	10	00	80	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.3.16.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCCConnectionRequest* from the UE on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 254/012, the SAT-E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 254/012/0001

GUTI: "25401200010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRCCConnectionRelease*.
- e) The UE is soft powered down.

7.3.16.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest* on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 254/012 to the SAT-E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 25401200010266436587
 Last visited registered TAI: 254/012/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	52	24	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	52	24	10	00	01	00				

7.3.17 UE recognising the priority order of the User controlled PLMN selector over the Operator controlled PLMN selector list – Satellite E-UTRAN in WB-S1 mode

7.3.17.1 Definition and applicability

The User controlled PLMN selector list has a higher priority as the OPLMN selector list on which the UE shall register. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{PLMNwACT}.

7.3.17.2 Conformance requirement

When registering onto a VPLMN the UE shall take into account the priority of UPLMNs first before the OPLMNs in the preferred list on the USIM.

- TS 22.011 [6], clause 3.2.2.2;
- TS 31.102 [4], clauses 4.2.5, 4.2.53 and 5.1.1.2.

7.3.17.3 Test purpose

To verify that the User controlled PLMN with a lower priority (defined by its position in EF_{PLMNwACT}) takes precedence over the OPLMN with a higher priority when the UE performs a network selection. Hereby the new coding for RAT satellite E-UTRAN in WB-S1 mode has to be handled correctly by the UE.

7.3.17.4 Method of test

7.3.17.4.1 Initial conditions

For this test an SAT-E-USS is required.

The SAT-E-USS transmits on two BCCHs, with the following network parameters:

- TAI (MCC/MNC/TAC): 254/001/0001.
- Access control: unrestricted.
- TAI (MCC/MNC/TAC): 244/010/0001.
- Access control: unrestricted.
- System information combination 32 as defined in TS 36.508 [29] clause 4.4.3.1.1 is used.

The default E-UTRAN UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°42:

Operator controlled PLMN selector with Access Technology

available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xx1x	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xxxx xxxx		xxxx xxxx			

EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 244 081 (MCC MNC)
- 1st ACT: E-UTRAN
- 2nd PLMN: 244 081
- 2nd ACT: GSM
- 3rd PLMN: 244 083
- 3rd ACT: E-UTRAN
- 4th PLMN: 244 082
- 4th ACT: GSM
- 5th PLMN: 244 003
- 5th ACT: E-UTRAN
- 6th PLMN: 244 004
- 6th ACT: UTRAN
- 7th PLMN: 244 005
- 7th ACT: UTRAN
- 8th PLMN: 244 081
- 8th ACT: UTRAN
- 9th PLMN: 244 007
- 9th ACT: UTRAN
- 10th PLMN: 244 008
- 10th ACT: E-UTRAN
- 11th PLMN: 244 009
- 11th ACT: UTRAN
- 12th PLMN: 244 010
- 12th ACT: satellite E-UTRAN in WB-S1 mode

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	40	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	40	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	80	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	02	00

EF_{OPLMNwACT} (Operator Controlled PLMN Selector with Access Technology)

Logically:

- 1st PLMN: 254 001 (MCC MNC)
- 1st ACT: satellite E-UTRAN in WB-S1 mode
- 2nd PLMN: 254 001
- 2nd ACT: GSM
- 3rd PLMN: 254 002
- 3rd ACT: E-UTRAN
- 4th PLMN: 254 003
- 4th ACT: E-UTRAN
- 5th PLMN: 254 004
- 5th ACT: UTRAN
- 6th PLMN: 254 005
- 6th ACT: UTRAN
- 7th PLMN: 254 006
- 7th ACT: UTRAN
- 8th PLMN: 254 007
- 8th ACT: UTRAN

Coding:	B01	B02	B03	B04	B05	B06	B07	B08	B09	B10
Hex	52	14	00	02	00	52	14	00	00	80
	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
	52	24	00	40	00	52	34	00	40	00
	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	52	44	00	80	00	52	54	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40
	52	64	00	80	00	52	74	00	80	00

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The UE is pre-configured with the UE position defined in TS 36.508 [29] clause 4.13.

7.3.17.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a *RRCCConnectionRequest* from the UE on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/010, the SAT-E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the SAT-E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the SAT-E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/010/0001

GUTI: "24401000010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the SAT-E-USS sends *RRCCConnectionRelease*.
- e) The UE is soft powered down.

7.3.17.5 Acceptance criteria

- 1.) After step a) the UE shall send a *RRCCConnectionRequest* on the satellite E-UTRAN in WB-S1 mode cell related to the BCCH transmitting MCC/MNC 244/010 to the SAT-E-USS.
- 2) After step b) the terminal shall send *AttachRequest* to the SAT-E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) After step d) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24401000010266436587
 Last visited registered TAI: 244/010/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	04	10	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	04	10	00	01	00				

7.4 Higher priority PLMN search handling

7.4.1 UE recognising the search period of the Higher priority PLMN

7.4.1.1 Definition and applicability

The Higher priority PLMN list gives in priority order the Higher priority PLMN on which the UE shall register first. The Higher priority PLMN search period gives the time interval in which the UE shall search for a possible Higher priority PLMN registration.

The registration attempts initiated by the terminal accessing UTRAN depends on terminal's capabilities and can be one of the following:

- I. registration procedures for UEs supporting CS or
- II. registration procedures for UEs supporting PS or
- III. registration procedures for UEs supporting CS/PS

7.4.1.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer and the priority order of the Higher priority PLMNs in the preferred list on the USIM.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.
- TS 24.008 [16], clause 4.7.5

7.4.1.3 Test purpose

To verify that the Higher priority PLMN timer is read and the Higher priority PLMN takes precedence over the VPLMN in which the UE is currently registered in.

7.4.1.4 Method of test

7.4.1.4.1 Initial conditions

For this test an UTRAN USS (in case of a Terminal accessing UTRAN) or a SS (in case of Terminal accessing a GERAN) is needed.

The USS (in case of a Terminal accessing UTRAN)/SS (in case of Terminal accessing a GERAN) transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- RAI (MCC/MNC/LAC/RAC): 244/082/0001/05 (only for UTRAN cell).
- Access control: unrestricted.

After the registration of UE the USS (in case of a Terminal accessing UTRAN) or a SS (in case of Terminal accessing a GERAN) transmits on a second BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/081/0001.
- RAI (MCC/MNC/LAC/RAC): 244/081/0001/05. (only for UTRAN cell)
- Access control: unrestricted.

NOTE: In case of a GERAN no packet system information is transmitted

The default UICC shall be used with the following exception:

EF_{HPPLMN} (Higher Priority PLMN Search period)

Logically:

Time interval: 6 minutes

Coding:

Byte	B1
Hex	01

The UICC shall be installed into the Terminal and the UE shall be set to automatic PLMN selection mode.

In case of a Terminal accessing UTRAN "Expected Sequence A" and in case of a Terminal accessing a GERAN "Expected Sequence B" shall be performed.

7.4.1.4.2 Procedure

Expected sequence A:

- a) The UE shall be powered on.
- b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS shall send RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- c) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
 - I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT to the UE with the following values:

LAI (MCC/MNC/LAC): 244/082/0001

TMSI: "34567890"
 - II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT with the following values to the UE:

RAI (MCC/MNC/LAC/RAC): 244/082/0001/05

P-TMSI: "34567890"

P-TMSI signature value: "AB1234"
 - III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT with some of the following values to the UE:

LAI (MCC/MNC/LAC): 244/082/0001

TMSI: "34567890"

RAI (MCC/MNC/LAC/RAC) 244/082/0001/05

P-TMSI "34567890"

P-TMSI signature value "AB1234"
- d) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
 - I. After receipt of a TMSI REALLOCATION COMPLETE from the UE during registration on CS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
 - II. After receipt of a ATTACH COMPLETE from the UE during registration on PS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
 - III. After receipt of a TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE from the UE during registration on CS/PS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- e) The USS starts to send on the second BCCH with the MCC/MNC 244/081. An internal timer shall start to run.

- f) After receipt on the cell related to the BCCH transmitting MCC/MNC 244/081 of a RRC CONNECTION REQUEST from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS. The internal timer is stopped.
- g) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
- I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT to the UE with following values:
- LAI (MCC/MNC/LAC): 244/081/0001
- TMSI: "12345678"
- II. During registration on PS and after receipt of a ROUTING AREA UPDATE REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ROUTING AREA UPDATE ACCEPT with the following values to the UE:
- RAI (MCC/MNC/LAC/RAC): 244/081/0001/05
- P-TMSI "12345678"
- P-TMSI signature value "AB1234"
- III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ROUTING AREA UPDATE REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ROUTING AREA UPDATE ACCEPT with some of the following values to the UE:
- LAI (MCC/MNC/LAC): 244/081/0001
- TMSI: "12345678"
- RAI (MCC/MNC/LAC/RAC) 244/081/0001/05
- P-TMSI "12345678"
- P-TMSI signature value "AB1234"
- h) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
- I. After receipt of a TMSI REALLOCATION COMPLETE from the UE during registration on CS, the USS sends RRC CONNECTION RELEASE to the UE followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or
- II. After receipt of a ROUTING AREA UPDATE COMPLETE from the UE during registration on PS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
- III. After receipt of a TMSI REALLOCATION COMPLETE and/or ROUTING AREA UPDATE COMPLETE from the UE during registration on CS/PS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- i) The UE is soft powered down.
- Expected sequence B:
- a) The UE shall be powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS shall send IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):244/082/0001

TMSI: "34567890"

to the UE.

- d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The SS starts to send on the second BCCH with the MCC/MNC 244/081. An internal timer shall start to run.
- f) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE. The internal timer is stopped.
- g) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):244/081/0001

TMSI: "12345678"

to the UE.

- h) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- i) The UE is soft powered down.

7.4.1.5 Acceptance criteria

- 1) After step e) the UE accessing a GERAN shall send CHANNEL REQUEST on the cell related to the BCCH transmitting MCC/MNC 244/081 to the SS and the UE accessing UTRAN shall send an RRC CONNECTION REQUEST on the cell related to the BCCH transmitting MCC/MNC 244/081 to the USS
- 2) After step e) the UE accessing a GERAN shall send LOCATION UPDATING REQUEST to the SS and the UE accessing UTRAN shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ROUTING AREA UPDATE REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ROUTING AREA UPDATE REQUEST to the USS during registration on CS/PS.
- 3) After step g) the UE accessing a GERAN shall respond with TMSI REALLOCATION COMPLETE and the UE accessing UTRAN shall respond with
 - I. TMSI REALLOCATION COMPLETE to the USS during registration on CS or
 - II. ROUTING AREA UPDATE COMPLETE during registration on PS or
 - III. TMSI REALLOCATION COMPLETE and/or ROUTING AREA UPDATE COMPLETE to the USS during registration on CS/PS.
- 4) The value of the internal timer shall not exceed 6 minutes.

NOTE: To take the systems processing time into account, the value of the internal timer may allowed to be a guard time of 10 % greater than the required 6 minutes.

- 5) After step i) the USIM shall contain the following values:

For UEs accessing GERAN and UEs accessing UTRAN and supporting (CS and PS) or (CS only):

E EF_{LOC} (Location Information)

Logically:

LAI-MCC: 244
 LAI-MNC: 081
 TMSI: "12345678"

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	42	14	80	xx	xx	xx	00

For UEs supporting (CS and PS) or (PS only):

EF_{PSLOC1} (Location Information)

Logically:

RAI-MCC: 244
 RAI-MNC: 081
 P-TMSI: "12345678"

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	12	34	56	78	xx	xx	xx	42	14	80	xx	xx
	B13	B14										
	xx	00										

7.4.2 GSM/UMTS dual mode UEs recognising the search period of the Higher priority PLMN

7.4.2.1 Definition and applicability

The Higher priority PLMN handling is defined in TS 22.011 [6]. The Higher priority PLMN search period gives the time interval between searches for a higher priority PLMN.

The registration attempts initiated by the UE depends on UEs capabilities and can be one of the following:

- I. registration procedures for UEs supporting CS or
- II. registration procedures for UEs supporting PS or
- III. registration procedures for UEs supporting CS/PS

To avoid a duplication of tests, this test supersedes the previous test case (7.4.1).

7.4.2.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer and the priority order of the Higher priority PLMNs in the preferred lists on the USIM including the Access Technology Identifier.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.

7.4.2.3 Test purpose

To verify that the Higher priority PLMN timer is read and the Higher priority PLMN with the higher priority (defined according to the selection order in TS 22.011 [6]) takes precedence over the VPLMN in which the UE is currently registered in.

7.4.2.4 Method of test

7.4.2.4.1 Initial conditions

For this test both a GSM SS and an UTRAN USS are needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- Access control: unrestricted.

After the registration of UE the GSM SS transmits on a second BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/081/0001.
- Access control: unrestricted.

At the same time as the SS sends on a second BCCH, the UMTS USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/081/0001.
- RAI (MCC/MNC/LAC/RAC): 244/081/0001/05.
- Access control: unrestricted.

The default UICC is used with the following exception:

EF_{HPLMNwACT} (HPLMN selector with Access Technology)

Logically:

1st PLMN: 244 081 (MCC MNC)
1st ACT: UTRAN

Coding:

Byte	B1	B2	B3	B4	B5
Hex	42	14	80	80	00

EF_{HPPLMN} (Higher Priority HPLMN Search period)

Logically:

Time interval: '01' - 6 minutes

Coding:

Byte	B1
Hex	01

EF_{UST} (USIM Service Table)

Settings from clause 4.1.1.8 of the present document apply with the following changes:

Logically:

Service n°43: HPLMN selector with access technology available

Coding:

Byte	B1	B2	B3	B4	B5	B6
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx x1xx

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

7.4.2.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of a LOCATION UPDATING REQUEST from the UE, the SS sends LOCATION UPDATING ACCEPT with:

LAI (MCC/MNC/LAC):244/082/0001

TMSI: "34567890"

to the UE.
- d) After receipt of a TMSI REALLOCATION COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The SS starts to send on the second BCCH with the MCC/MNC 244/081 and the USS starts to send with the Same MCC/MNC. An internal timer shall start to run.
- f) After receipt of a RRC CONNECTION REQUEST on the UTRAN-cell related to the BCCH transmitting MCC/MNC 244/081 from the UE, the USS sends RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS. The internal timer is stopped.
- g) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
 - I. During registration on CS and after receipt of a LOCATION UPDATING REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT with the following values to the UE:

LAI (MCC/MNC/LAC): 244/081/0001

TMSI: "12345678"
 - II. During registration on PS and after receipt of a ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends ATTACH ACCEPT with the following values to the UE:

RAI (MCC/MNC/LAC/RAC)244/081/0001/05

P-TMSI "12345678"

P-TMSI signature value "AB1234"
 - III. During registration on CS/PS and after receipt of a LOCATION UPDATING REQUEST and/or ATTACH REQUEST from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends LOCATION UPDATING ACCEPT and/or ATTACH ACCEPT with some of the following values to the UE:

LAI (MCC/MNC/LAC): 244/081/0001

TMSI: "12345678"

RAI (MCC/MNC/LAC/RAC)244/081/0001/05

P-TMSI "12345678"

P-TMSI signature value "AB1234"

- h) Depending on which domain the UE is going to be registered on, one of the following sequences will be passed through:
- I. After receipt of a TMSI REALLOCATION COMPLETE from the UE during registration on CS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or
 - II. After receipt of a ATTACH COMPLETE from the UE during registration on PS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS or.
 - III. After receipt of a TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE from the UE during registration on CS/PS, the USS sends RRC CONNECTION RELEASE to the UE, followed by RRC CONNECTION RELEASE COMPLETE sent by the UE to the USS.
- i) The UE is soft powered down.

7.4.2.5 Acceptance criteria

- 1) After step e) the UE shall send an RRC CONNECTION REQUEST on the UTRAN-cell related to the BCCH transmitting MCC/MNC 244/081 to the USS.
 - 2) After step e) the UE shall send
 - I. LOCATION UPDATING REQUEST to the USS during registration on CS or
 - II. ATTACH REQUEST during registration on PS or
 - III. LOCATION UPDATING REQUEST and/or ATTACH REQUEST to the USS during registration on CS/PS.
 - 3) After step g) the UE shall respond with
 - I. TMSI REALLOCATION COMPLETE during registration on CS or
 - II. ATTACH COMPLETE during registration on PS or
 - III. TMSI REALLOCATION COMPLETE and/or ATTACH COMPLETE to the USS during registration on CS/PS.
 - 4) The value of the internal timer shall not exceed 6 minutes.
- NOTE: To take the systems processing time into account, the value of the internal timer may allowed to be a guard time of 10 % greater than the required 6 minutes.
- 5) After step i) the USIM shall contain the following values:

For UEs supporting (CS and PS) or (CS only):

EF_{LOC} (Location Information)

Logically:

LAI-MCC: 244
 LAI-MNC: 081
 TMSI: "12345678"

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	12	34	56	78	42	14	80	xx	xx	xx	00

For UEs supporting (CS and PS) or (PS only):

EF_{PSLOC} (Location Information)

Logically:

RAI-MCC: 244
 RAI-MNC: 081
 P-TMSI: "12345678"

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	12	34	56	78	xx	xx	xx	42	14	80	xx	xx
	B13	B14										
	xx	00										

7.4.3 UE recognising the search period of the Higher priority PLMN – E-UTRAN

7.4.3.1 Definition and applicability

The Higher priority PLMN list gives in priority order the Higher priority PLMN on which the UE shall register first. The Higher priority PLMN search period gives the time interval in which the UE shall search for a possible Higher priority PLMN registration.

7.4.3.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer and the priority order of the Higher priority PLMNs in the preferred lists on the USIM.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.
- TS 24.301 [26], clause 5.5.3.2
- TS 31.102 [4], clause 4.2.6.

7.4.3.3 Test purpose

To verify that the Higher priority PLMN timer is read and the Higher priority PLMN takes precedence over the VPLMN in which the UE is currently registered in. Hereby the new coding for RAT E-UTRAN/NB-IoT has to be handled correctly by the UE.

7.4.3.4 Method of test

7.4.3.4.1 Initial conditions

For this test an E-USS/NB-IoT is required.

The E-USS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/008/0001.
- Access control: unrestricted.

After the registration of UE the E-USS transmits on a second BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.

The NB-SS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/008/0001.
- Access control: unrestricted.

After the registration of UE the NB-SS transmits on a second BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/0001.
- Access control: unrestricted.

The E-UTRAN/EPC UICC shall be used with the following exception:

EF_{UST} (USIM Service Table)

Settings from clause 4.4.1 of the present document apply with the following changes:

Logically:

Service n°43: HPLMN selector with access technology available

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx x1xx	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx11 xxxx					

EF_{HPPLMN} (Higher Priority PLMN Search period)

Logically:

Time interval: '01'

NOTE: For an MS that does not only support any of the following or a combination of NB-S1 mode or GERAN EC-GSM-IoT or Category M1 of E-UTRAN enhanced-MTC mode, T is 6 minutes. Otherwise T is 2 hours.

Coding:

Byte	B1
Hex	01

The UICC shall be installed into the Terminal and the UE shall be set to automatic PLMN selection mode.

7.4.3.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCCConnectionRequest/RRCCConnectionRequest-NB* from the UE on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/008, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.

TAI (MCC/MNC/TAC):244/008/ 0001

GUTI: "24400800010266436587"
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB*.
- e) The E-USS/NB-SS starts to send on the second BCCH with the MCC/MNC 244/083. An internal timer shall start to run.

- f) After receipt of an *RRCCConnectionRequest/RRCCConnectionRequest-NB* from the UE on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS/NB-SS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with to the UE:

TAI (MCC/MNC/TAC):244/083/ 0001

GUTI: "24408300010266436587"

- h) After receipt of the *TrackingAreaUpdatComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB*.
- i) The UE is soft powered down.

7.4.3.5 Acceptance criteria

- 1.) After step e) the UE shall send a *RRCCConnectionRequest/RRCCConnectionRequest-NB* on the E-UTRAN-cell/NB-IoT-cell related to the BCCH transmitting MCC/MNC 244/083 to the E-USS/NB-SS.
- 2) After step f) the terminal shall send *TrackingAreaUpdateReques* to the E-USS/NB-SS.
- 3) After step g) the terminal shall respond with *TrackingAreaUpdatComplete* during registration.
- 4) After step i) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically:

GUTI: 24408300010266436587
 Last visited registered TAI: 244/083/0001
 EPS update status: updated

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	0B	F6	42	34	80	00	01	02	66	43	65	87
	B13	B14	B15	B16	B17	B18						
	42	34	80	00	01	00						

7.4.4 E-UTRAN/EPC capable UEs recognising the search period of the Higher priority PLMN – GSM/E-UTRAN

7.4.4.1 Definition and applicability

The Higher priority PLMN handling is defined in TS 22.011 [6]. The Higher priority PLMN search period gives the time interval between searches for a higher priority PLMN.

To avoid a duplication of tests, this test supersedes the previous test case (7.4.3).

7.4.4.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer and the priority order of the Higher priority PLMNs in the preferred lists on the USIM including the Access Technology Identifier.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.

7.4.4.3 Test purpose

To verify that the Higher priority PLMN timer is read and the Higher priority PLMN with the higher priority (defined according to the selection order in TS 22.011 [6]) takes precedence over the VPLMN in which the UE is currently registered in. Hereby the new coding for RAT E-UTRAN has to be handled correctly by the UE.

7.4.4.4 Method of test

7.4.4.4.1 Initial conditions

For this test both a GSM SS and an E-UTRAN E-USS are needed.

The GSM SS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/082/0001.
- RAI (MCC/MNC/LAC/RAC): 244/082/0001/05.
- Access control: unrestricted.

After the registration of UE the GSM SS transmits on a second BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/081/0001.
- RAI (MCC/MNC/LAC/RAC): 244/081/0001/05.
- Access control: unrestricted.

At the same time as the SS sends on a second BCCH, the E- USS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/081/0001.
- Access control: unrestricted.

The E-UTRAN/EPC UICC is used with the following exception:

EF_{HPLMNwACT} (HPLMN selector with Access Technology)

Logically:

1st PLMN: 244 081 (MCC MNC)
1st ACT: E-UTRAN

Coding:

Byte	B1	B2	B3	B4	B5
Hex	42	14	80	40	00

EF_{HPPLMN} (Higher Priority HPLMN Search period)

Logically:

Time interval: '01' - 6 minutes

Coding:

Byte	B1
Hex	01

EF_{UST} (USIM Service Table)

Settings from clause 4.4.1 of the present document apply with the following changes:

Logically:

Service n°43:	HPLMN selector with access technology	available
Service n°86:	Allowed CSG Lists and corresponding indications	not available

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx x1xx	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx01 xxxx					

The UICC is installed into the ME, the UE is set to automatic PLMN selection mode and to auto GPRS attach.

7.4.4.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a CHANNEL REQUEST from the UE, the SS sends IMMEDIATE ASSIGNMENT to the UE.
- c) After receipt of an ATTACH REQUEST from the UE, the SS sends ATTACH ACCEPT with:

RAI (MCC/MNC/LAC/RAC): 244/082/0001/05

TMSI: "34567890"

to the UE.
- d) After receipt of a ATTACH COMPLETE from the UE, the SS sends CHANNEL RELEASE to the UE.
- e) The SS starts to send on the second BCCH with the MCC/MNC 244/081 and the E-USS starts to send with the Same MCC/MNC. An internal timer shall start to run.
- f) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/081, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with to the UE:

TAI (MCC/MNC/TAC): 244/081/ 0001

GUTI: "24408100010266436587"
- h) After receipt of the *TrackingAreaUpdatComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- i) The UE is soft powered down.

7.4.4.5 Acceptance criteria

- 1) After step e) the UE shall send a *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/081 to the e-USS.
- 2) After step f) the terminal shall send *TrackingAreaUpdateReques* to the E-USS.
- 3) After step g) the terminal shall respond with *TrackingAreaUpdatComplete* during registration.
- 4) After step i) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically:

GUTI: 24408100010266436587
 Last visited registered TAI: 244/081/0001
 EPS update status: updated

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	0B	F6	42	14	80	00	01	02	66	43	65	87
	B13	B14	B15	B16	B17	B18						
	42	14	80	00	01	00						

7.4.5 E-UTRAN/EPC capable UEs recognising the search period of the Higher priority PLMN – UTRAN/E-UTRAN

7.4.5.1 Definition and applicability

The Higher priority PLMN list gives in priority order the Higher priority PLMN on which the UE shall register first. The Radio Access Technology identifier defines the Radio network in which the UE shall register. The list is stored on the USIM in the EF_{HPLMNwACT}. The Higher priority PLMN search period gives the time interval in which the UE shall search for a possible Higher priority PLMN registration.

To avoid a duplication of tests, this test supersedes test 7.4.x.

7.4.5.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer and the priority order of the Higher priority PLMNs in the preferred list on the USIM including the Access Technology Identifier.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.

7.4.5.3 Test purpose

To verify that the Higher priority PLMN timer is read and the Higher priority PLMN with the higher priority (defined by its position in EF_{HPLMNwACT}) takes precedence over the VPLMN in which the UE is currently registered in. Hereby the new coding for RAT E-UTRAN has to be handled correctly by the UE.

7.4.5.4 Method of test

7.4.5.4.1 Initial conditions

For this test both a UTRAN USS and an E-UTRAN E-USS are needed.

The USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 244/009/0001.
- RAI (MCC/MNC/LAC/RAC): 244/009/0001/05.
- Access control: unrestricted.

After the registration of UE the USS transmits on a second BCCH, with the following network parameters:

- Attach/detach: disabled.

- LAI (MCC/MNC/LAC): 244/081/0001.
- RAI (MCC/MNC/LAC/RAC): 244/081/0001/05.
- Access control: unrestricted.

At the same time as the SS sends on a second BCCH, the E- USS transmits on BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 244/081/0001.
- Access control: unrestricted.

The E-UTRAN/EPC UICC is used with the following exception:

EF_{HPLMNwACT} (HPLMN selector with Access Technology)

Logically:

1st PLMN: 244 081 (MCC MNC)
1st ACT: E-UTRAN

Coding:

Byte	B1	B2	B3	B4	B5
Hex	42	14	80	40	00

EF_{HPPLMN} (Higher Priority HPLMN Search period)

Logically:

Time interval: '01' - 6 minutes

Coding:

Byte	B1
Hex	01

EF_{UST} (USIM Service Table)

Settings from clause 4.4.1 of the present document apply with the following changes:

Logically:

Service n°43:	HPLMN selector with access technology	available
Service n°86:	Allowed CSG Lists and corresponding indications	not available

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Binary	xx1x xx11	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx x1xx	xxxx xxxx	xxxx xxxx
	B9	B10	B11					
	xxxx xxxx	xxxx xxxx	xx01 xxxx					

The UICC is installed into the Terminal, the UE is set to automatic PLMN selection mode and to auto GPRS attach.

7.4.5.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of a RRC CONNECTION REQUEST from the UE, the USS shall send RRC CONNECTION SETUP to the UE, followed by RRC CONNECTION SETUP COMPLETE sent by the UE to the USS.
- c) After receipt of an ATTACH REQUEST from the UE, the SS sends ATTACH ACCEPT with:

RAI (MCC/MNC/LAC/RAC): 244/009/0001/05

TMSI: "34567890"

to the UE.

- d) After receipt of a *ATTACH COMPLETE* from the UE, the USS sends *RRC CONNECTION RELEASE* to the UE, followed by *RRC CONNECTION RELEASE COMPLETE* sent by the UE to the USS.
- e) The USS starts to send on the second BCCH with the MCC/MNC 244/081 and the E-USS starts to send with the Same MCC/MNC. An internal timer shall start to run.
- f) After receipt of an *RRCCONNECTIONRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/081, the E-USS sends *RRCCONNECTIONSetup* to the UE, followed by *RRCCONNECTIONSetupComplete* sent by the UE to the E-USS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with to the UE:

TAI (MCC/MNC/TAC):244/081/ 0001

GUTI: "24408100010266436587"

- h) After receipt of the *TrackingAreaUpdatComplete* during registration from the UE, the E-USS sends *RRCCONNECTIONRelease*.
- i) The UE is soft powered down.

7.4.5.5 Acceptance criteria

- 1.) After step e) the UE shall send a *RRCCONNECTIONRequest* on the E-UTRAN-cell related to the BCCH transmitting MCC/MNC 244/081 to the e-USS.
- 2) After step f) the terminal shall send *TrackingAreaUpdateReques* to the E-USS.
- 3) After step g) the terminal shall respond with *TrackingAreaUpdatComplete* during registration.
- 4) After step i) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically:

GUTI: 24408100010266436587
 Last visited registered TAI: 244/081/0001
 EPS update status: updated

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	0B	F6	42	14	80	00	01	02	66	43	65	87
	B13	B14	B15	B16	B17	B18						
	42	14	80	00	01	00						

7.4.6 UE recognising Multiplier Coefficient for Higher Priority PLMN search - satellite-NG-RAN

7.4.6.1 Definition and applicability

The Multiplier Coefficient for Higher Priority PLMN search is the multiplier coefficient take with the time interval configured in EF_{HPPLMN} to adjust the time interval for higher priority PLMN search. Higher priority PLMN list gives in priority order the Higher priority PLMN on which the UE shall register first.

7.4.6.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer multiplied by the Multiplier Coefficient for Higher Priority PLMN search and the priority order of the Higher priority PLMNs in the preferred lists on the USIM.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.
- TS 24.501 [42], clause 5.5.1.2.4.
- TS 23.122 [31], clause 4.4.3.3.1.
- TS 31.102 [4], clause 4.2.6, 4.2.8, and 4.4.11.20.

7.4.6.3 Test purpose

To verify that the Higher priority PLMN timer is read.

To verify that the Multiplier Coefficient for Higher Priority PLMN search is read,

Upon time interval between two searches adjusted with the multiplier coefficient, to verify that the Higher priority PLMN takes precedence over the VPLMN in which the UE is currently registered in.

Hereby the new coding for NG-RAN satellite access has to be handled correctly by the UE.

7.4.6.4 Method of test

7.4.6.4.1 Initial conditions

For this test a SAT-NG-SS is required.

The SAT-NG-SS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/008/000001.
- Access control: unrestricted.

After the registration of UE the SAT-NG-SS transmits on a second BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The 5G-NR UICC supporting Rel-17 features is used with the following exception:

EF_{HPLMNwACT} (HPLMN selector with Access Technology)

Logically:

1st PLMN: 244 083 (MCC MNC)
1st ACT: satellite NG-RAN

Coding:

Byte	B1	B2	B3	B4	B5
Hex	42	34	80	04	00

EF_{HPPLMN} (Higher Priority HPLMN Search period)

Logically:

Time interval: '01' - 6 minutes

Coding:

Byte	B1
Hex	01

EF_{MCHPLMN} (Multiplier Coefficient for Higher Priority PLMN search)

Logically:

Multiplier Coefficient '02' - 2

Coding:

Byte	B1
Hex	02

EF_{UST} (USIM Service Table)

Settings from clause 4.15.1 of the present document apply with the following changes:

Logically:

Service n°43:	HPLMN selector with access technology	available
Service n°127:	Control plane-based steering of UE in VPLMN	not available
Service n°144:	Multiplier Coefficient for Higher Priority PLMN search via NG-RAN satellite access	available

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx x1xx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xxxx xxxx	...	x0xx xxxx	xxxx xxxx	1xxx xxxx	xxxx xxxx

The UICC shall be installed into the Terminal and the UE shall be set to automatic PLMN selection mode.

7.4.6.4.2 Procedure

- The UE is powered on.
- After receipt of a *RRCRequest* from the UE on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/008, the NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the NG-SS.
- During registration and after receipt of a REGISTRATION REQUEST from the UE, the NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC): 244/008/ 000001
 5G-GUTI: "24400800010266436587"
- After receipt of the REGISTRATION COMPLETE during registration from the UE, the NG-SS sends *RRCRelease*.
- The NG-SS starts to send on the second BCCH with the MCC/MNC 244/083. An internal timer shall start to run.
- After receipt of an *RRCRequest* from the UE on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083, the NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the NG-SS. The internal timer is stopped.
- During registration and after receipt of a REGISTRATION REQUEST from the UE, the NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC): 244/083/ 000001

5G-GUTI: "24408300010266436587"

h) The UE is soft powered down.

7.4.6.5 Acceptance criteria

1) After step e) the UE shall send a *RRCRequest* on the satellite NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the SAT-NG-SS.

2) The value of the internal timer shall exceed 6 minutes and not exceed 12 minutes.

NOTE: To take the systems processing time into account, the value of the internal timer may allow to be a guard time of 10 % greater than the required 12 minutes.

3) After step h) the USIM shall contain the following values:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.4.7 UE recognising the search period of the Higher priority PLMN – NG-RAN

7.4.7.1 Definition and applicability

The Higher priority PLMN list gives in priority order the Higher priority PLMN on which the UE shall register first. The Higher priority PLMN search period gives the time interval in which the UE shall search for a possible Higher priority PLMN registration.

7.4.7.2 Conformance requirement

After registered onto a VPLMN the UE shall take into account the Higher priority PLMN search period timer and the priority order of the Higher priority PLMNs in the preferred lists on the USIM.

- TS 22.011 [6], clauses 3.2.2 and 3.2.2.5.
- TS 24.501 [42], clause 5.5.1.2.4.
- TS 31.102 [4], clause 4.2.6.

7.4.7.3 Test purpose

To verify that the Higher priority PLMN timer is read and the Higher priority PLMN takes precedence over the VPLMN in which the UE is currently registered in. Hereby the new coding for NG-RAN has to be handled correctly by the UE.

7.4.7.4 Method of test

7.4.7.4.1 Initial conditions

For this test a NG-SS is required.

The NG-SS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/008/000001.
- Access control: unrestricted.

After the registration of UE the NG-SS transmits on a second BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/083/000001.
- Access control: unrestricted.

The 5G-NR UICC is used with the following exception:

EF_{HPLMNwACT} (HPLMN selector with Access Technology)

Logically:

1st PLMN: 244 083 (MCC MNC)
1st ACT: NG-RAN

Coding:

Byte	B1	B2	B3	B4	B5
Hex	42	34	80	08	00

EF_{HPPLMN} (Higher Priority HPLMN Search period)

Logically:

Time interval: '01' - 6 minutes

Coding:

Byte	B1
Hex	01

EF_{PLMNwACT} (UPLMN Selector with Access Technology)

Logically:

1st PLMN: 244 081 (MCC MNC)
1st ACT: E-UTRAN
2nd PLMN: 244 081
2nd ACT: GSM
3rd PLMN: 244 083
3rd ACT: NG-RAN
4th PLMN: 244 082
4th ACT: GSM
5th PLMN: 244 003
5th ACT: satellite NG-RAN

6th PLMN: 244 004
 6th ACT: UTRAN
 7th PLMN: 244 005
 7th ACT: NG-RAN
 8th PLMN: 244 081
 8th ACT: UTRAN
 9th PLMN: 244 007
 9th ACT: UTRAN
 10th PLMN: 244 008
 10th ACT: E-UTRAN
 11th PLMN: 244 009
 11th ACT: UTRAN
 12th PLMN: 244 010
 12th ACT: E-UTRAN

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15
Hex	42	14	80	40	00	42	14	80	00	80	42	34	80	08	00
	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30
	42	24	80	00	80	42	34	00	04	00	42	44	00	80	00
	B31	B32	B33	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45
	42	54	00	08	00	42	14	80	80	00	42	74	00	80	00
	B46	B47	B48	B49	B50	B51	B52	B53	B54	B55	B56	B57	B58	B59	B60
	42	84	00	40	00	42	94	00	80	00	42	04	10	40	00

EF_{UST} (USIM Service Table)

Settings from clause 4.9.1 of the present document apply with the following changes:

Logically:

Service n°43:	HPLMN selector with access technology	available
Service n°127:	Control plane-based steering of UE in VPLMN	not available

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx x1xx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16			
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	x0x0 111 x			

7.4.7.4.2 Procedure

- The UE is powered on.
- After receipt of a *RRCRequest* from the UE on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/008, the NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the NG-SS.
- During registration and after receipt of a REGISTRATION REQUEST from the UE, the NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC):244/008/000001

5G-GUTI:"24400800010266436587"
- After receipt of the REGISTRATION COMPLETE during registration from the UE, the NG-SS sends *RRCRelease*.
- The NG-SS starts to send on the second BCCH with the MCC/MNC 244/083. An internal timer shall start to run.

- f) After receipt of an *RRCRequest* from the UE on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083, the NG-SS sends *RRCSetup* to the UE, followed by *RRCSetupComplete* sent by the UE to the NG-SS. The internal timer is stopped.
- g) During registration and after receipt of a REGISTRATION REQUEST from the UE, the NG-SS initiates authentication, starts integrity by using the security procedure and sends REGISTRATION ACCEPT to the UE with:

TAI (MCC/MNC/TAC):244/083/000001

5G-GUTI:"24408300010266436587"

- h) The UE is soft powered down.

7.4.7.5 Acceptance criteria

- 1) After step e) the UE shall send a *RRCRequest* on the NG-RAN-cell related to the BCCH transmitting MCC/MNC 244/083 to the NG-SS.
- 2) The value of the internal timer shall not exceed 6 minutes.

NOTE: To take the systems processing time into account, the value of the internal timer may allow to be a guard time of 10 % greater than the required 6 minutes.

- 3) After step h) the USIM shall contain the following values:

EF5GS3GPPLOC1 (5GS 3GPP location information)

Logically:

5G-GUTI:

MCC: 244

MNC: 083

AMF Region ID: 0

AMF Set ID: 4

AMF Pointer: 2

5G-TMSI: 66 43 65 87

Last visited registered TAI in 5GS for 3GPP access: 244 083 000001

5GS update status for 3GPP access: 5U1 UPDATED

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	00	0B	F2	42	34	80	00	01
	B9	B10	B11	B12	B13	B14	B15	B16
	02	66	43	65	87	42	34	80
	B17	B18	B19	B20				
	00	00	01	00				

7.5 Void

8 Subscription independent tests

8.1 Phone book procedures

8.1.1 Recognition of a previously changed phonebook

8.1.1.1 Definition and applicability

If the UICC is inserted into a GERAN Rel-4 or earlier terminal, the phonebook may have been altered in this GSM session. If the ADN entry has been changed or deleted, the GSM terminal will not be able to change the appropriate additional phonebook entries (e.g. EF_{ANR} Additional Number). In that case the UICC shall set a flag in the appropriate EF_{PBC} (phonebook Control). If the UICC is inserted in a 3G or GERAN Terminal, the 3G or GERAN Terminal shall recognise the flag and the phonebook shall be synchronised by the Terminal. Once the Terminal recognise the set flag in the EF_{PBC}, the Terminal shall update the Change Counter in the EF_{CC}.

8.1.1.2 Conformance requirement

The 3G or GERAN Terminal shall recognise the set flag in the EF_{PBC} and then synchronise the phonebook. The Terminal shall also update EF_{CC} (Change Counter).

- TS 31.102 [4], clause 4.4.2.

8.1.1.3 Test purpose

- 1) To verify that the Terminal has recognised that the phonebook has been altered by a GSM Terminal.
- 2) To verify that the Terminal does the synchronising of the changed phonebook entries.
- 3) To verify that the Terminal updates the EF_{PBC} and EF_{CC}.

8.1.1.4 Method of test

8.1.1.4.1 Initial conditions

No USS is needed for this test.

The default UICC is used with the following exception:

EF_{ADN} (Abbreviated Dialling Number)

Logically:

Record 1:	Length of alpha identifier:	32 characters;
	Alpha identifier:	"ABCDEFGHJKLMNOPQRSTUVWXYZABCDEF";
	Length of BCD number:	"03";
	TON and NPI:	Telephony and Unknown;
	Dialled number:	123;
	CCI:	None;
	Ext1:	None.

Record 1:

Coding:	B1	B2	B3	...	B32	B33	B34	B35	B36	B37	B38	B39	...	B46
Hex	41	42	43	...	46	03	81	21	F3	FF	FF	FF	...	FF

EF_{PBC} (Phonebook Control)

Logically:

Record 1: The ADN Record No. 1 has been hanged by a GSM terminal.

Related ADN record is not hidden.

Coding:	B1	B2
Hex	01	00

EF_{CC} (Change Counter)

Logically: "000F"

Coding:	B1	B2
Hex	00	0F

The UICC is installed into the Terminal

8.1.1.4.2 Procedure

- a) The Terminal is powered on.
- b) The Terminal shall stay powered on until the phonebook synchronisation procedures are finished. If the synchronisation is indicated by the Terminal, the Terminal shall only powered down after this indication is vanished.

8.1.1.5 Acceptance criteria

After step b) the USIM shall contain the following values:

EF_{PBC} (Phonebook Control)

Logically:
Record 1: The entry control information is reset.
Related ADN record is not hidden.

Coding:	B1	B2
Hex	00	00

EF_{CC} (Change Counter)

Logically: The counter is incremented to "0010"

Coding:	B1	B2
Hex	00	10

8.1.2 Update of the Phonebook Synchronisation Counter (PSC)

8.1.2.1 Definition and applicability

The phonebook synchronisation Counter is used to unambiguously identify the status of the phonebook. Every time the phonebook is reset/deleted or the UID and/or the CC has run out of range, the PSC shall be regenerated.

The PSC is a part of the phonebook identifier.

8.1.2.2 Conformance requirement

Every time either the UID or the CC is incremented by the Terminal, the value of the content of the appropriate EF shall be tested. If either UID or CC has reached "FF FF", the related EF shall be set to "00 01" and the PSC is incremented.

- TS 31.102 [4], clause 4.4.2.12.2.

8.1.2.3 Test purpose

- 1) To verify that the Terminal has recognised that the values of UID and CC has changed.
- 2) To verify that the Terminal resets the value of EF_{UID} and EF_{CC}.
- 3) To verify that the Terminal updates EF_{PSC}.

8.1.2.4 Method of test

8.1.2.4.1 Initial conditions

No USS is needed for this test.

The default UICC is used with the following exception:

EF_{UID} (Unique Identifier)

Logically: one record is set to "FF FF"

Coding:	B1	B2
Hex	FF	FF

EF_{PUID} (Previous Unique Identifier)

Logically: is set to "FF FF"

Coding:	B1	B2
Hex	FF	FF

EF_{CC} (Change Counter)

Logically: set to "FF FF"

Coding:	B1	B2
Hex	FF	FF

EF_{PSC} (Phonebook Synchronisation Counter)

Logically: set to "00 00 FF FF"

Coding:	B1	B2	B3	B4
Hex	00	00	FF	FF

At least one phonebook entry shall be empty and available for creating a new entry (e.g. an appropriate ADN record).

The UICC is installed into the Terminal and the UE is powered on and the correct PIN is entered.

8.1.2.4.2 Procedure

- a) A new phonebook entry shall be created.

NOTE 1: This may be done by storing a new telephone number in an empty ADN record.

- b) The UE shall have given the time to perform the regeneration of the UID records.

NOTE 2: It is assumed that the UE will indicate the time it needs to perform the regeneration by displaying a busy signal to the user.

8.1.2.5 Acceptance criteria

After step b) the USIM shall contain the following values:

The EF_{UID} (Unique Identifier) shall have been regenerated with UID values starting with "00 01". The UID values may be stored in any order, but shall be unique. The entry in EF_{UID} with value FF FF (the maximum value) shall have been replaced by an appropriate value which shall be distinguishable to the maximum value. EF_{PUID} shall contain a UID value (other than FFFF) that is present in EF_{UID}.

EF_{CC} (Change Counter)

Logically: set to "00 01"

Coding:	B1	B2
Hex	00	01

EF_{PSC} (Phonebook Synchronisation Counter)

Logically: set to "00 01 00 00"

Coding:	B1	B2	B3	B4
Hex	00	01	00	00

8.1.3 Phonebook content handling

8.1.3.1 Handling of BCD number/ SSC content extension

8.1.3.1.1 Definition and applicability

The length of BCD number/SSC contents in EF_{ADN} byte gives the number of bytes of the following two data items containing actual BCD number/SSC information. This means that the maximum value is 11, even when the actual ADN/SSC information length is greater than 11. When an ADN/SSC has extension, it is indicated by the extension1 identifier being unequal to 'FF'. The remainder is stored in the EF_{EXT1} with the remaining length of the additional data being coded in the appropriate additional record itself.

8.1.3.1.2 Conformance requirement

The terminal shall support the BCD number/ SSC extension for EF_{ADN} as defined in TS 31.102 [4], clauses 4.4.2.3 and 4.4.2.4.

Reference:

- TS 31.102 [4], clauses 4.4.2.3 and 4.4.2.4.

8.1.3.1.3 Test purpose

- 1) To verify that the terminal is able to read and update BCD numbers/ SSC content with and without extension correctly in EF_{ADN} and EF_{EXT1}.

8.1.3.1.4 Method of test

8.1.3.1.4.1 Initial conditions

The terminal is connected to the USIM Simulator.

Prior to the test execution the terminal manufacturer shall state the maximum number of BCD digits (excluding TON/NPI), which are supported by the terminal for global phonebook updating.

The default USIM is used with the following exceptions:

Only the global phonebook is present.

The global phonebook shall contain:

EF_{PBR} (Phonebook reference file)

Logically: Only EF_{ADN} and EF_{EXT1} are present in the global phonebook.

EF_{ADN} (Abbreviated dialling numbers)

Logically:

10 records, each record non-empty and unique. Unless otherwise stated, the ADN records shall not use extended BCD numbers/SSC strings.

Record 1: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact001";
 Length of BCD number: 11;
 TON and NPI: Telephony and International;
 Dialed number: "00112233445566778899";
 CCI: 'FF';
 Ext1: 01.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	31	FF	...	FF	0B
	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45	B46	
	91	00	11	22	33	44	55	66	77	88	99	FF	01	

Record 2: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact002";
 Length of BCD number: 11;
 TON and NPI: Telephony and International;
 Dialed number: "01234567890123456789";
 CCI: 'FF';
 Ext1: 'FF'.

Record 2:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	32	FF	...	FF	0B
	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45	B46	
	91	10	32	54	76	98	10	32	54	76	98	FF	FF	

Record 3: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact003";
 Length of BCD number: 11;
 TON and NPI: Telephony and International;
 Dialed number: "99887766554433221100";
 CCI: 'FF';
 Ext1: '02'.

Record 3:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	33	FF	...	FF	0B
	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45	B46	
	91	99	88	77	66	55	44	33	22	11	00	FF	02	

Record 4: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact004";
 Length of BCD number: 9;
 TON and NPI: Telephony and International;
 Dialed number: "1212121212121212";
 CCI: 'FF';
 Ext1: 'FF'.

Record 4:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	34	FF	...	FF	09
	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45	B46	
	91	21	21	21	21	21	21	21	21	FF	FF	FF	FF	

Record 7: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact007";
 Length of BCD number: 3;
 TON and NPI: Telephony and International;
 Dialed number: "678";
 CCI: 'FF';
 Ext1: 'FF'.

Record 7:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	37	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	B40	B41	B42	B43	B44	B45	B46	
	91	76	F8	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	

EF_{EXT1} (Extension 1)

Logically: 4 records

Record 1: Record type: '02'
 Extension data: "01234567890123456789";
 Identifier: 'FF'.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	02	0A	10	32	54	76	98	10	32	54	76	98	FF

Record 2: Record type: '02'
 Extension data: "99887766554433221100";
 Identifier: '03'.

Record 2:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	02	0A	99	88	77	66	55	44	33	22	11	00	03

Record 3: Record type: '02'
 Extension data: "11p12345";

Identifier: 'FF'.

Record 3:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	02	04	11	1C	32	54	FF	FF	FF	FF	FF	FF	FF

Record 4:	Record type:	'00'
	Extension data:	empty;
	Identifier:	'FF'.

Record 4:

[illegible]

8.1.3.1.4.2 Procedure

- a) The terminal is switched on and the USIM application shall be activated.
- b) The user shall use an MMI dependent procedure to select the global phonebook.
- c) The user shall change the BCD number of the entry "Contact002" to "22446622446622446600777888999". If the maximum number of BCD digits supported for the global phonebook update is less than in the requested input BCD number string, then the user shall enter the BCD number string as requested, but only up to the maximum number of BCD digits which are supported for updating.
- d) The user shall extend the BCD number of the entry "Contact007" to "01234567890123456789777888999".. If the maximum number of BCD digits supported for the global phonebook update is less than in the requested input BCD number string, then the user shall enter the BCD number string as requested, but only up to the maximum number of BCD digits which are supported for updating.
- e) The user shall delete the phonebook entry "Contact001".
- f) The user shall set the BCD number of the entry "Contact002" to "22446622446600"
- g) The user shall create the new phonebook entry "NewContact" with the BCD number "1234567890123456789012345678901234567890123456789012".. If the maximum number of BCD digits supported for the global phonebook update is less than in the requested input BCD number string, then the user shall enter the BCD number string as requested, but only up to the maximum number of BCD digits which are supported for updating.
- h) The user shall delete the phonebook entry "Contact003".
- i) The terminal is switched off.

8.1.3.1.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application.
- 2) After step b) the terminal shall have selected the global phonebook and shall have read EF_{PBR} in the global phonebook.
- 3) After step c) the global phonebook shall contain a record with "22446622446622446600" as BCD number and "04" as extension record identifier. EF_{EXT1} shall contain a record with "Additional data" as record type, the BCD number extension "777888999" and "FF" as identifier to indicate the end of the chain. If the maximum number of BCD digits supported for global phonebook updating is less than in the requested input BCD number, then EF_{ADN} and EF_{EXT1} shall contain the BCD number as entered on the MMI.

- 4) After step d) the terminal shall have taken action to prevent storage of the extended BCD number, e.g. by giving an indication to the user or not allowing to enter the extended number. EF_{EXT1} shall have not been updated and the extension record identifier of the entry "Contact007" shall remain as "FF".
- 5) After step e) records of EF_{ADN} and EF_{EXT1} which were used to store the data for the phonebook entry "Contact001" shall be empty, i.e. the EF_{ADN} record shall be "FF... FF" and the EF_{EXT1} record shall be "00FF... FF".
- 6) After step f) the record of EF_{EXT1} which was used to store the BCD number extension "777888999" shall be empty and the record used for storing the entry with the alpha identifier "Contact002" of EF_{ADN} shall contain the BCD number "22446622446600" and the extension record identifier "FF".
- 7) After step g) a record of EF_{ADN} shall contain "NewContact" as alpha identifier, "12345678901234567890" as BCD number and shall use an extension record identifier unequal to "FF".

The EF_{EXT1} record which was indicated in the EF_{ADN} record used in this case shall contain "Additional data" as record type, "12345678901234567890" as BCD number and an extension record identifier unequal to "FF", while the EF_{EXT1} record used to continue the chain inside EF_{EXT1} shall contain "Additional data" as record type, "123456789012" as BCD number and "FF" as extension record identifier.

If the maximum number of BCD digits supported for global phonebook updating is less than the requested input BCD number, then EF_{ADN} and EF_{EXT1} shall contain the BCD number as entered on the MMI.

- 8) After step h) the record of EF_{ADN} which was used to store the data for "Contact003" and the related records of EF_{EXT1} shall be empty.

8.1.4 Phonebook selection

8.1.4.1 Definition and applicability

The UICC may contain a global phonebook, or application specific phonebooks, or both in parallel. When both phonebook types co-exist, they are independent and no data is shared. In this case, it shall be possible for the user to select which phonebook the user would like to access.

8.1.4.2 Conformance requirement

The terminal shall support the global and the application specific phonebooks as defined in TS 31.102 [4], clause 4.4.2.

Reference:

- TS 31.102 [4], clause 4.4.2.

8.1.4.3 Test purpose

- 1) To verify that the terminal offers a possibility to select which phonebook the user would like to select if both, the global and the local phonebook, co-exist.
- 2) To verify that the data contained in the local phonebook can be read and updated correctly.
- 3) To verify that the data contained in the global phonebook can be read and updated correctly.

8.1.4.4 Method of test

8.1.4.4.1 Initial conditions

The terminal is connected to the USIM Simulator.

The default USIM is used with the following exceptions:

The local and the global phonebook are both present.

The local phonebook shall contain:

EF_{PBR} (Phonebook reference file)

Logically: Only EF_{ADN} and EF_{EXT1} are present in the local phonebook.

EF_{ADN} (Abbreviated dialling numbers)

Logically: 10 records, each record non-empty and unique.

Record 4: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact004";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 004;
 CCI: 'FF';
 Ext1: 'FF'.

Record 4:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	34	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	F4	FF	FF	FF	...	FF						

Record 5: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact005";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 1234;
 CCI: 'FF';
 Ext1: None.

Record 5:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	35	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	21	43	FF	FF	FF	...	FF						

The global phonebook shall contain:

EF_{PBR} (Phonebook reference file)

Logically: Only EF_{ADN} is present in the global phonebook.

EF_{ADN} (Abbreviated dialling numbers)

Logically: 8 records, records 3 and 6 empty, each non-empty record unique.

Record 1: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact001";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 001;
 CCI: 'FF';
 Ext1: 'FF'.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	31	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	F1	FF	FF	FF	...	FF						

Record 2: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact002";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 002;
 CCI: 'FF';
 Ext1: 'FF'.

Record 2:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	32	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	F2	FF	FF	FF	...	FF						

Record 4: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact004";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 0041;
 CCI: 'FF';
 Ext1: 'FF'.

Record 4:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	34	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	14	FF	FF	FF	...	FF						

Record 5: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact005";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 1234;
 CCI: 'FF';
 Ext1: 'FF'.

Record 5:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	35	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	21	43	FF	FF	FF	...	FF						

Record 7: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact007";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;

Dialled number: 007;
 CCI: 'FF';
 Ext1: 'FF'.

Record 7:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	37	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	F7	FF	FF	FF	...	FF						

Record 8: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact008";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialled number: 008;
 CCI: 'FF';
 Ext1: 'FF'.

Record 8:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	38	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	F8	FF	FF	FF	...	FF						

8.1.4.4.2 Procedure

- a) The terminal is switched on and the USIM application shall be activated.
- b) The user shall use an MMI dependent procedure to select the global phonebook.
- c) The global phonebook record with the alpha identifier "Contact005" and the associated dialling number shall be read by the user.
- d) The dialling number of the global phonebook record with the alpha identifier "Contact005" shall be set to "+1122330".
- e) A new entry with the values "Contact006" as alpha identifier and "+9876543210" as associated dialling number shall be added to the global phonebook.
- f) The user shall use an MMI dependent procedure to select the local phonebook.
- g) The local phonebook record with the alpha identifier "Contact005" and the associated dialling number shall be read by the user.
- h) The dialling number of the local phonebook record with the alpha identifier "Contact005" shall be set to "+11223345".
 - i) The user shall try to add a new entry with the values "Contact007" as alpha identifier and "+007" as associated dialling number to the local phonebook.
- j) The user shall delete the entry "Contact004" from the local phonebook.
- k) The user shall add a new entry with the values "Contact007" as alpha identifier and "+007" as associated dialling number to the local phonebook.
- l) The user shall use an MMI dependent procedure to select the global phonebook.
- m) The user shall delete the entry "Contact007" from the global phonebook.
- n) The terminal is switched off.

8.1.4.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application, shall have read the status of the local Phonebook in EF_{UST}.
- 2) After step b) the terminal shall have selected the global phonebook and shall have read EF_{PBR} in the global phonebook.
- 3) After step c) the terminal shall have read the global phonebook record which is used to store the entry "Contact005" and shall have presented the alpha identifier "Contact005" and the dialling number "+1234" to the user.
- 4) After step d) EF_{ADN} in the global phonebook shall contain a record with the alpha identifier "Contact005" with the new dialling number "+1122330" and the terminal shall have given an indication to the user that the phonebook update has been performed successfully.
- 5) After step e) a new record shall have been added to EF_{ADN} in the global phonebook with the alpha identifier "Contact006" and the dialling number string "+9876543210".
- 6) After step f) the terminal shall have selected the local phonebook and shall have read EF_{PBR} in the local phonebook.
- 7) After step g) the terminal shall have read the local phonebook record which is used to store the entry "Contact005" and shall have presented the alpha identifier "Contact005" and the dialling number "+1234" to the user.
- 8) After step h) EF_{ADN} in the local phonebook shall contain a record with the alpha identifier "Contact005" and with new dialling number "+11223345" and the terminal shall have given an indication to the user that the phonebook update has been performed successfully.
- 9) After step i) the terminal shall have given an indication that update of the local phonebook can't be performed. EF_{ADN} shall have not been updated.
- 10) After step j) the local phonebook record which was used to store the entry "Contact004" shall be empty and the terminal shall have indicated that the deletion of the phonebook entry was performed successfully.
- 11) After step k) a new record shall have been added to EF_{ADN} in the local phonebook with the alpha identifier "Contact007" and the dialling number string "+007"
- 12) After step l) the terminal shall have selected the global phonebook and shall have read EF_{PBR} in the global phonebook.
- 13) After step m) the global phonebook record which was used to store the entry "Contact007" shall be empty and the terminal shall have indicated that the deletion of the phonebook entry was performed successfully.

8.1.5 Local Phonebook handling

8.1.5.1 Definition and applicability

The UICC may contain a global phonebook, or application specific phonebooks, or both in parallel.

8.1.5.2 Conformance requirement

The terminal shall support the local phonebook as defined in TS 31.102 [4], clause 4.4.2.

Reference:

- TS 31.102 [4], clause 4.4.2.

8.1.5.3 Test purpose

- 1) To verify that the terminal supports the local phonebook without existence of the global phonebook.

2) To verify that the data contained in the local phonebook can be read and updated correctly.

8.1.5.4 Method of test

8.1.5.4.1 Initial conditions

The terminal is connected to the USIM Simulator.

The default USIM is used with the following exceptions:

The local phonebook is present, the global phonebook is not present.

The local phonebook shall contain:

EF_{PBR} (Phonebook reference file)

Logically: Only EF_{ADN} and EF_{EXT1} are present in the local phonebook.

EF_{ADN} (Abbreviated dialling numbers)

Logically: 10 records, each record non-empty and unique.

Record 4: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact004";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 004;
 CCI: 'FF';
 Ext1: 'FF'.

Record 4:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	34	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	00	F4	FF	FF	FF	...	FF						

Record 5: Length of alpha identifier: 32 characters;
 Alpha identifier: "Contact005";
 Length of BCD number: "03";
 TON and NPI: Telephony and International;
 Dialed number: 1234;
 CCI: 'FF';
 Ext1: 'FF'.

Record 5:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...	B32	B33
Hex	43	6F	6E	74	61	63	74	30	30	35	FF	...	FF	03
	B34	B35	B36	B37	B38	B39	...	B46						
	91	21	43	FF	FF	FF	...	FF						

8.1.5.4.2 Procedure

- The terminal is switched on and the USIM application shall be activated.
- The user shall use an MMI dependent procedure to select the phonebook on the USIM (local phonebook).

- c) The local phonebook record with the alpha identifier "Contact005" and the associated dialling number shall be read by the user.
- d) The dialling number of the local phonebook record with the alpha identifier "Contact005" shall be set to "+11223345" and the alpha identifier shall be changed to "Contact8901234567890123456789012".
- e) The user shall try to add a new entry with the values "Contact007" as alpha identifier and "+007" as associated dialling number to the local phonebook.
- f) The user shall delete the entry "Contact004" from the local phonebook.
- g) The user shall add a new entry with the values "Contact007" as alpha identifier and "+007" as associated dialling number to the local phonebook.
- h) The terminal is switched off.

8.1.5.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application, shall have read the status of the local Phonebook in EF_{UST}.
- 2) After step b) the terminal shall have selected the local phonebook and shall have read EF_{PBR} in the local phonebook.
- 3) After step c) the terminal shall have read the local phonebook record which is used to store the entry "Contact005" and shall have presented the alpha identifier "Contact005" and the dialling number "+1234" to the user.
- 4) After step d) EF_{ADN} in the local phonebook shall contain a record with the new alpha identifier "Contact8901234567890123456789012" and the dialling number "+11223345" and the terminal shall have given an indication to the user that the phonebook update has been performed successfully.
- 5) After step e) the terminal shall have given an indication that update of the local phonebook can't be performed. EF_{ADN} shall have not been updated.
- 6) After step f) the local phonebook record which was used to store the entry "Contact004" in the local phonebook shall be empty and the terminal shall have indicated that the deletion of the phonebook entry was performed successfully.
- 7) After step g) a new record shall have been added to EF_{ADN} in the local phonebook with the alpha identifier "Contact007" and the dialling number string "+007"

8.2 Short message handling report

8.2.1 Correct storage of a SM on the USIM

8.2.1.1 Definition and applicability

Once a SMS is received by the UE, the Terminal shall store the SM on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SM). For this it is assumed, that at least one relevant SMS field are available on the USIM and they are indicated as empty.

8.2.1.2 Conformance requirement

The received class 2 SMS shall be stored on the USIM in EF_{SMS}. The status of a received SMS, which has not been read yet, shall be set to "3" (SMS to be read).

- TS 23.038 [3], clause 4.
- TS 23.040 [13], clause 10.1, operation 6;
- TS 24.011, clauses 8.2.2, 8.2.3 and 8.2.5.4, Table 8.4 (part 2)

- TS 31.102 [4], clauses 4.2.25.

8.2.1.3 Test purpose

- 1) To verify that the Terminal stored correctly the class 2 SMS on the USIM.
- 2) To verify that the Terminal sets the status of a received, and not yet read SMS to "3" (SMS to be read)

8.2.1.4 Method of test

8.2.1.4.1 Initial conditions

The default UICC is used with the following exceptions:

- 1) EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- SMS available
- SMS Status available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available

Byte:	B1	B2	B3	B4	B5
Binary	xx1x xx11	xxxx X11x	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

- 1) EF_{SMS} (Short Message Service) and EF_{SMSS} (SMS Status) as defined in 8.2.4.4.1.

The USS (in case of a Terminal accessing UTRAN)/SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC):246/081/0001.
- Access control: unrestricted.

The USS/SS transmits the class 2 short message with the parameters as defined in 8.2.4.4.1.

User Equipment:

The UE is connected to the USIM-Simulator and the USS/SS.

8.2.1.4.2 Procedure

CS related sequence for UTRAN/GERAN

Perform the "CS related procedure" and continue with "Generic Procedure 1" as defined clause 8.2.4.4.2 as test "8.2.1" with the following parameters:

- Applicable Network Simulator (NWS): USS (UMTS System Simulator or System Simulator)
- CS is used to send and receive short messages
- ME supports UTRAN or GERAN

CS related procedure:

- a) The ME is switched on and will perform the Profile Download, USIM initialization and network registration.
- b) Continue with step c) of the Generic Procedure 1 as defined in 8.2.4.4.2.

8.2.1.5 Acceptance criteria

- 1) After step c) the record of the USIM EF_{SMS} which was empty, shall contain the values as defined in 8.2.4.5

8.2.2 Correct reading of a SM on the USIM

8.2.2.1 Definition and applicability

A SM which is stored but not yet read, is indicated as Status "3" (SMS to be read) on EF_{SMS}. The Terminal may indicate the user this status. After the SMS is read by the user, the status of the SMS shall be changed to "1" (SMS read).

8.2.2.2 Conformance requirement

A received SM was stored on the USIM in EF_{SMS}. At the time the SMS is read by the user, the status of a received SMS, shall be changed to "1" (SMS read).

- TS 23.038 [3], clause 4.
- TS 23.040 [13];
- TS 31.102 [4], clauses 4.2.25 and 4.2.28.

8.2.2.3 Test purpose

- 1) To verify that the Terminal read correctly the SMS on the USIM.
- 2) To verify that the Terminal changes the status of a read SMS to "1" (SMS read).

8.2.2.4 Method of test

8.2.2.4.1 Initial conditions

The default UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- SMS available
- SMS Status available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available

Coding:	B1	B2	B3	B4	B5
binary	xx1x xx11	xxxx X11x	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{SMS} (SMS Status)

Logically: Last used TP-MR not set.
Memory capacity available (flag unset b1="1").

Coding:	B1	B2
Hex	FF	FF

EF_{SMS} (Short Message Service)

Logically: Status byte set to SMS to be read.
A chosen test is written in the text body of the EF_{SMS}.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	03	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "xx" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

At least 9 records.

Logically: Status byte set to empty
no text is written (Remainder Bytes set to "FF").

Record:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

A USS (in case of a Terminal accessing UTRAN) or a SS (in case of a Terminal accessing GERAN) is only needed to bring the UE into a defined idle mode. The USS/SS transmits on the BCCH:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

User Equipment:

The UE is in MM-state "idle, updated".

8.2.2.4.2 Procedure

- a) After the UE has brought in idle state, the SMS shall be read.
- b) The UE is powered off.

8.2.2.5 Acceptance criteria

- 1) After a) the correct text of the SMS shall be read from the UE display.
- 2) After step b) the EF_{SMS} record 1 shall contains the following values:

Logically: Status byte set to SMS read.
The entire content of the SMS shall be unchanged.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	01	xx	xx	Xx	xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "xx" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

8.2.3 SM memory capacity exceeded handling

8.2.3.1 Definition and applicability

Once a SMS is received by the UE, the Terminal shall store the SM on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SM). For this it is assumed, that at least one relevant SMS field are available on the USIM and they are indicated as empty. If all SMS data field are full and furthermore all memory capacity reserved for SMS inside the ME is filled up to maximum and a SM was rejected, then this shall be indicated in the SMS Status file.

8.2.3.2 Conformance requirement

The received class 2 SMS shall be stored on the USIM in EF_{SMS}. The status of a received SMS, which has not been read yet, shall be set to "3" (SMS to be read). If the terminal notifies the network that the terminal has been unable to accept a short message because its memory capacity has been exceeded, then the ME shall set the Memory Capacity Exceeded Notification Flag in the EF_{SMSS}.

- TS 23.038 [3], clause 4.
- TS 23.040 [13], clause 10.1, operation 6;
- TS 24.011, clauses 8.2.2, 8.2.3 and 8.2.5.4, Table 8.4 (part 2)
- TS 31.102 [4], clauses 4.2.25 and 4.2.28.

8.2.3.3 Test purpose

- 1) To verify that the Terminal stored correctly the class 2 SMS on the USIM.
- 2) To verify that the Terminal sets the status of a received, and not yet read SMS to "3" (SMS to be read).
- 3) To verify that the Terminal sets the memory full flag in EF_{SMSS} if the terminal notifies the network that the terminal has been unable to accept a short message because its memory capacity has been exceeded.

8.2.3.4 Method of test

8.2.3.4.1 Initial conditions

The default UICC is used with the following exception:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- SMS available
- SMS Status available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available

Coding:	B1	B2	B3	B4	B5
binary	xx1x xx11	xxxx X11x	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{SMS} (Short Message Service)

At least 10 records.

Record 1 shall be empty.

Logically: Status byte set to empty.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

All other Record shall be full.

Logically: Status byte set to SMS read.

The text body of the record shall be filled with any appropriate text.

Records:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	01	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "xx" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the received SMS.

EF_{SMSS} (SMS Status)

Logically: Last used TP-MR not defined.
Memory capacity available (flag unset b1="1").

Coding:	B1	B2
Hex	FF	FF

The USS (in case of a Terminal accessing UTRAN) /SS (in case of a Terminal accessing a GERAN) transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- Access control: unrestricted.

The USS/ SS transmits the short messages with the following parameters:

Logically:

Class 2 SM:TS-Service Centre Address:

Bit 8:	1
Type-Of-Number:	International number
Numbering-Plan-Identification:	ISDN/telephony numbering plan
Address value:	112233445566

SMS TPDU:

TP-Message-Type-Indicator:	SMS-DELIVER (in the direction SC to MS)
TP-More-Messages-to-Send:	No more messages are waiting for the MS in this SC
TP-Reply-Path:	TP-Reply-Path parameter is not set in this SMS-DELIVER
TP-User-Data-Header-Indicator:	The TP-UD field contains only the short message
TP-Status-Report-Indication:	A status report shall be returned to the SME

Bits 4-3: 00

TP-Originating-Address:

Bit 8: 1

Type-Of-Number: International number

Numbering-Plan-Identification: ISDN/telephony numbering plan

Address value: 012344556677

TP-Protocol-Identifier: No interworking, but SME-to-SME protocol

TP-Data-Coding-Scheme:

Bits 8-7: General Data Coding

Bit 6: Text is uncompressed

Bit 5: Bits 2-1 have a message class meaning

Bits 4-3: GSM 7 bit default alphabet

Bits 2-1: Class 2: (U)SIM specific message

TP-Service-Centre-Time-Stamp: 02-03-04 09:13:06 GMT + 1

TP-User-Data-Length: 160

TP-User-Data:

"Once a SMS is received by the UE, the Terminal shall store the SMS on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SMS). For this..."

Class 1 SM:

The same content as for the Class 2 SMS except :

SMS TPDU:

TP-More-Messages-to-Send: More messages are waiting for the MS in this SC

TP-Data-Coding-Scheme:

Bits 2-1: Class 1: default meaning: ME-specific

TP-Service-Centre-Time-Stamp: Always set to current time of the system simulator

User Equipment:

The UE is in MM-state "idle, updated". If there is ME storage capacity available the storage for SMS inside the ME shall be able to allow for at least one more mobile terminated (e.g. Class 1) SM.

8.2.3.4.2 Procedure

- a) After the UE is set to idle mode, the defined class 2 SM defined in 8.2.1.4.1 with 160 characters shall be sent to the UE.
- b) After the UE has indicated that a SM was received, the SM shall not be read.
- c) The USS starts sending Class 1 SMs as defined in 8.2.1.4.1 until the UE sends an RP-ERROR message with cause "Memory capacity exceeded".
- d) The UE is powered off.

8.2.3.5 Acceptance criteria

1) After step b) the record of the EF_{SMS} which was empty, shall contain the following values:

Logically: Status byte set to SMS to be read
 The text of the received SMS shall be present in the record.

Record 1:

Logically:

Status:

RFU bits 8-6: 000

Status: Used space, message received by UE from network, message to be read

TS-Service Centre Address:

Bit 8: 1

Type-Of-Number: International number

Numbering-Plan-Identification: ISDN/telephony numbering plan

Address value: 112233445566

SMS TPDU:

TP-Message-Type-Indicator: SMS-DELIVER (in the direction SC to UE)

TP-More-Messages-to-Send: No more messages are waiting for the UE in this SC

TP-Reply-Path: TP-Reply-Path parameter is not set in this SMS-DELIVER

TP-User-Data-Header-Indicator: The TP-UD field contains only the short message

TP-Status-Report-Indication: A status report shall be returned to the SME

Bits 4-3: 00

TP-Originating-Address:

Bit 8: 1

Type-Of-Number: International number

Numbering-Plan-Identification: ISDN/telephony numbering plan

Address value: 012344556677

TP-Protocol-Identifier: No interworking, but SME-to-SME protocol

TP-Data-Coding-Scheme:

Bits 8-7: General Data Coding

Bit 6: Text is uncompressed

Bit 5: Bits 2-1 have a message class meaning

Bits 4-3: GSM 7 bit default alphabet

Bits 2-1: Class 2: (U)SIM specific message

TP-Service-Centre-Time-Stamp: 02-03-04 09:13:06 GMT + 1

TP-User-Data-Length: 160

TP-User-Data:

"Once a SMS is received by the UE, the Terminal shall store the SMS on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SMS). For this ..."

Coding:

Hex	03	07	91	11	22	33	44	55	66	24	0C	91	10	32	44	55
	66	77	00	12	20	30	40	90	31	60	40	A0	4F	F7	B8	0C
	0A	83	A6	CD	29	28	3D	07	C9	CB	E3	72	DA	5E	26	83
	C4	79	10	1D	5D	06	55	8B	2C	10	1D	5D	06	51	CB	F2
	76	DA	1D	66	83	E6	E8	30	9B	0D	9A	D3	DF	F2	32	88
	8E	2E	83	A6	CD	29	E8	ED	06	D1	D1	65	50	75	9A	6C
	B2	40	69	33	88	8E	4E	CF	41	E9	39	28	ED	26	A7	C7
	61	7A	99	0C	12	E7	41	74	74	19	34	66	87	E7	73	90
	0C	F4	36	83	E8	E8	32	68	DA	9C	82	50	D5	69	B2	09
	9A	C3	CB	E3	B4	39	3D	06	4D	9B	D3	94	0B	64	7C	CB
	41	74	74	7A	0E	72	B9	5C								

After step d) the Memory Capacity Exceeded Notification Flag in the EF_{SMSS} shall be set to exceeded.

EF_{SMSS} (SMS Status)

Logically: Last used TP-MR shall be set to any appropriate value.
Memory capacity exceeded (flag set b1="0").

Coding:	B1	B2
Hex	xx	FE

8.2.4 Correct storage of an SM on the UICC

8.2.4.1 Definition and applicability

For IMS: When a SIP MESSAGE request including a short message in the "vnd.3gpp.sms" payload is delivered and the extracted RP-DATA payload contains a Class 2 SM (USIM specific SM) the terminal shall store the SM on the USIM or ISIM. For this it is assumed, that at least one relevant SMS field are available on the USIM or ISIM and they are indicated as empty.

That the UE correctly implemented the role of an SMS-over-IP receiver is tested in clause 18.2 of TS 34.229-1 [33].

8.2.4.2 Conformance requirement

As TS 31.103[32] and TS 31.102[4] do not indicate in which of both applications a SM received via IMS shall be stored, the received Class 2 SM received via IMS shall be stored in EF_{SMSS} either on the USIM or on the ISIM. The status of a received SMS, which has not been read yet, shall be set to "3" (SMS to be read).

- TS 23.038 [3], clause 4.
- TS 23.040 [13], clause 10.1, operation 6;
- TS 24.011, clauses 7.3.1.1, 8.2.2, 8.2.3 and 8.2.5.4, Table 8.4 (part 2)
- TS 31.102 [4], clauses 4.2.25,
- TS 31.103 [32], clauses 4.2.12,
- TS 34.229 [33], Annexes C.2, C.18 and 18.2.

8.2.4.3 Test purpose

- 1) To verify that the Terminal stored correctly the class 2 SMS on the USIM or the ISIM.

2) To verify that the Terminal sets the status of a received, and not yet read SMS to "3" (SMS to be read).

8.2.4.4 Method of test

8.2.4.4.1 Initial conditions

The E-UTRAN/EPC ISIM-UICC is used with the following exception:

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- SMS available
- SMS Status available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available

Byte:	B1	B2	B3	B4	B5
Binary	xx1x xx11	xxxx X11x	xxxx 1x00	xxxx x1xx	xxxx xx11

The coding of EF_{UST} shall conform with the capabilities of the USIM used.

EF_{SMS} (Short Message Service) – For USIM and ISIM

At least 10 records.
Record 1 shall be empty.
Logically: Status byte set to empty.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

All other Record shall be full.
Logically: Status byte set to SMS read.
The text body of the record shall be filled with any appropriate text.

Records:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	01	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "xx" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the received SMS.

EF_{SMSS} (SMS Status) – For USIM and ISIM

Logically: Last used TP-MR not defined.
Memory capacity available (flag unset b1="1").

Coding:	B1	B2
Hex	FF	FF

The NWS transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- USS LAI (MCC/MNC/LAC): 246/081/0001 (For UTRAN testing only)
- E-USS TAI (MCC/MNC/TAC): 246/081/0001 (For E-UTRAN testing only)
- Access control: unrestricted.

The NWS transmits the short messages with the following parameters:

Logically:

Class 2 SM: TS-Service Centre Address:

Bit 8:	1
Type-Of-Number:	International number
Numbering-Plan-Identification:	ISDN/telephony numbering plan
Address value:	112233445566

SMS TPDU:

TP-Message-Type-Indicator:	SMS-DELIVER (in the direction SC to MS)
TP-More-Messages-to-Send:	No more messages are waiting for the MS in this SC
TP-Reply-Path:	TP-Reply-Path parameter is not set in this SMS-DELIVER
TP-User-Data-Header-Indicator:	The TP-UD field contains only the short message
TP-Status-Report-Indication:	A status report shall be returned to the SME
Bits 4-3:	00

TP-Originating-Address:

Bit 8:	1
Type-Of-Number:	International number
Numbering-Plan-Identification:	ISDN/telephony numbering plan
Address value:	012344556677

TP-Protocol-Identifier:	No interworking, but SME-to-SME protocol

TP-Data-Coding-Scheme:

Bits 8-7:	General Data Coding
Bit 6:	Text is uncompressed
Bit 5:	Bits 2-1 have a message class meaning
Bits 4-3:	GSM 7 bit default alphabet
Bits 2-1:	Class 2: (U)SIM specific message

TP-Service-Centre-Time-Stamp:	02-03-04 09:13:06 GMT + 1

TP-User-Data-Length:	160

TP-User-Data:

"Once a SMS is received by the UE, the Terminal shall store the SMS on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SMS). For this..."

8.2.4.4.2 Procedure

Sequence A for IMS on UTRAN

- a) The ME activates the required bearer, discovers the P-CSCF, and registers with the values from the ISIM with the IMS services (see Note 2).
- b) Continue with step c) in the Generic Procedure 1.

Sequence B for IMS on E-UTRAN

- a) The ME activates the required bearer, discovers the P-CSCF, and registers with the values from the ISIM with the IMS services (see Note 3).
- b) Continue with step c) in the Generic Procedure 1.

Generic Procedure 1

- c) After the UE is set to idle mode, the defined class 2 SM defined in 8.2.1.4.1 with 160 characters shall be sent to the UE (see Note 1) as specified in clause 18.2 of TS 34.229-1 [33] and use the SM payload defined in 8.2.1.4.1 in the Message-body of MESSAGE defined in clause A.7.1 in TS 34.229-1 [33].
- d) After the UE has indicated that a SM was received, the SM shall not be read.
- e) The UE is powered off.

Note 1: In case of IMS the Short Message is contained in the message body of the SIP MESSAGE.

Note 2: For E-UTRAN: The EPS bearer context activation according to the procedures defined in TS 34.229-1 [33], Annex C.2 and C.18 is performed.

Note 3: For UTRAN: For SMS-over-IP a PDP context activation according to the procedures defined in TS 34.229-1 [33], Annex C.2 and C.17 is performed.

8.2.4.5 Acceptance criteria

- 1) After step d) the record of the EF_{SMS} (on either the ISIM or USIM) which was empty, shall contain the following values:

Logically: Status byte set to SMS to be read
 The text of the received SMS shall be present in the record.

Record 1:

Logically:

Status:

RFU bits 8-6: 000

Status: Used space, message received by UE from network, message to be read

TS-Service Centre Address:

Bit 8: 1

Type-Of-Number: International number

Numbering-Plan-Identification: ISDN/telephony numbering plan

Address value: 112233445566

SMS TPDU:

TP-Message-Type-Indicator: SMS-DELIVER (in the direction SC to UE)
 TP-More-Messages-to-Send: No more messages are waiting for the UE in this SC
 TP-Reply-Path: TP-Reply-Path parameter is not set in this SMS-DELIVER
 TP-User-Data-Header-Indicator: The TP-UD field contains only the short message
 TP-Status-Report-Indication: A status report shall be returned to the SME
 Bits 4-3: 00

TP-Originating-Address:

Bit 8: 1
 Type-Of-Number: International number
 Numbering-Plan-Identification: ISDN/telephony numbering plan
 Address value: 012344556677

TP-Protocol-Identifier: No interworking, but SME-to-SME protocol

TP-Data-Coding-Scheme:

Bits 8-7: General Data Coding
 Bit 6: Text is uncompressed
 Bit 5: Bits 2-1 have a message class meaning
 Bits 4-3: GSM 7 bit default alphabet
 Bits 2-1: Class 2: (U)SIM specific message

TP-Service-Centre-Time-Stamp: 02-03-04 09:13:06 GMT + 1

TP-User-Data-Length: 160

TP-User-Data:

"Once a SMS is received by the UE, the Terminal shall store the SMS on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SMS). For this ..."

Coding:
Hex

03	07	91	11	22	33	44	55	66	24	0C	91	10	32	44	55
66	77	00	12	20	30	40	90	31	60	40	A0	4F	F7	B8	0C
0A	83	A6	CD	29	28	3D	07	C9	CB	E3	72	DA	5E	26	83
C4	79	10	1D	5D	06	55	8B	2C	10	1D	5D	06	51	CB	F2
76	DA	1D	66	83	E6	E8	30	9B	0D	9A	D3	DF	F2	32	88
8E	2E	83	A6	CD	29	E8	ED	06	D1	D1	65	50	75	9A	6C
B2	40	69	33	88	8E	4E	CF	41	E9	39	28	ED	26	A7	C7
61	7A	99	0C	12	E7	41	74	74	19	34	66	87	E7	73	90
0C	F4	36	83	E8	E8	32	68	DA	9C	82	50	D5	69	B2	09
9A	C3	CB	E3	B4	39	3D	06	4D	9B	D3	94	0B	64	7C	CB
41	74	74	7A	0E	72	B9	5C								

- 2) The UE shall pass the requirements which are verified in the MT SMS test case specified in clause 18.2 of TS 34.229-1 [33].

8.2.5 Correct reading of a SM on the USIM if USIM and ISIM are present

8.2.5.1 Definition and applicability

A SM which is stored but not yet read, is indicated as Status "3" (SMS to be read) on EF_{SMS}. The Terminal may indicate the user this status. After the SMS is read by the user, the status of the SMS shall be changed to "1" (SMS read). This applies to short messages stored on the USIM and to short messages stored on the ISIM.

8.2.5.2 Conformance requirement

A received SM was stored in EF_{SMS} on the ISIM and another SM was stored in EF_{SMS} on the USIM. The user shall be able to read short messages stored on the USIM. At the time the SMS is read by the user, the status of a received SMS, shall be changed to "1" (SMS read).

- TS 23.038 [3], clause 4.
- TS 23.040 [13];
- TS 31.102 [4], clauses 4.2.25 and 4.2.28,
- TS 31.103 [32], clauses 4.2.12 and 4.2.13.

8.2.5.3 Test purpose

- 1) To verify that the Terminal correctly reads the SMS on the USIM if the USIM and ISIM are both present.
- 2) To verify that the Terminal changes the status of a read SMS to "1" (SMS read) of the message read from the USIM.

8.2.5.4 Method of test

8.2.5.4.1 Initial conditions

The E-UTRAN/EPC ISIM-UICC is used with the following exception:

EF_{UST} (USIM Service Table)

As defined in in clause 4.5.2 with the exception that services n°10 (Short Message Storage) and n°11 (SMS Status Report) are available.

EF_{SMS} (SMS Status) on the USIM and on the ISIM

Logically: Last used TP-MR not set.
Memory capacity available (flag unset b1="1").

Byte:	B1	B2
Hex:	FF	FF

EF_{SMS} (Short Message Service) on the USIM

Logically: Status byte set to SMS to be read.
A chosen test is written in the text body of the EF_{SMS}. This content shall be different from the content stored in EF_{SMS} in the ISIM.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	03	xx	xx	xx	Xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "xx" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

At least 9 records.

Logically: Status byte set to empty
no text is written (Remainder Bytes set to "FF").

Record:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

EF_{SMS} (Short Message Service) on the ISIM

Logically: Status byte set to SMS to be read.
A chosen test is written in the text body of the EF_{SMS}. This content shall be different from the content stored in EF_{SMS} in the USIM.

Record 1:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex:	03	yy	yy	yy	Yy	yy	yy	yy	yy	yy	yy	yy	...	yy

NOTE: "yy" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

At least 9 records.

Logically: Status byte set to empty
no text is written (Remainder Bytes set to "FF").

Record:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex:	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

EF_{SMS} on the USIM and EF_{SMS} on the ISIM shall not share the same memory.

EF_{SMSS} on the USIM and EF_{SMSS} on the ISIM shall not share the same memory.

User Equipment:

The User Equipment is connected to the E-UTRAN/EPC ISIM-UICC.

8.2.5.4.2 Procedure

- The UE is switched on.
- The user shall read the SMS stored on the USIM.
- The UE is switched off

8.2.5.5 Acceptance criteria

- After b) the correct text of the SMS on the USIM shall be read and be displayed to the user.
- After step b) the EF_{SMS} record 1 of the USIM shall contains the following values:

Logically: Status byte set to SMS read.
The entire content of the SMS shall be unchanged.

Record 1:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex:	01	xx	xx	xx	Xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "yy" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

8.2.6 Correct reading of a SM on the ISIM if USIM and ISIM are present

8.2.6.1 Definition and applicability

A SM which is stored but not yet read, is indicated as Status "3" (SMS to be read) on EF_{SMS}. The Terminal may indicate the user this status. After the SMS is read by the user, the status of the SMS shall be changed to "1" (SMS read). This applies to short messages stored on the USIM and to short messages stored on the ISIM.

8.2.6.2 Conformance requirement

A received SM was stored in EF_{SMS} on the ISIM and another SM was stored in EF_{SMS} on the USIM. The user shall be able to read short messages stored on the ISIM. At the time the SMS is read by the user, the status of a received SMS,

- 3) After step b) the EFSMS and EFSMSS on the ISIM shall remain unchanged.

shall be changed to "1" (SMS read).

- TS 23.038 [3], clause 4.
- TS 23.040 [13];
- TS 31.102 [4], clauses 4.2.25 and 4.2.28,
- TS 31.103 [32], clauses 4.2.12 and 4.2.13.

8.2.6.3 Test purpose

- 1) To verify that the Terminal correctly reads the SMS on the ISIM if the USIM and ISIM are both present.
- 2) To verify that the Terminal changes the status of a read SMS to "1" (SMS read) of the message read from the ISIM.

8.2.6.4 Method of test

8.2.6.4.1 Initial conditions

The E-UTRAN/EPC ISIM-UICC is used with the following exception:

EF_{UST} (USIM Service Table)

As defined in in clause 4.5.2 with the exception that services n°10 (Short Message Storage) and n°11 (SMS Status Report) are available.

EF_{SMSS} (SMS Status) on the USIM and on the ISIM

Logically: Last used TP-MR not set.
Memory capacity available (flag unset b1="1").

Byte:	B1	B2
Hex:	FF	FF

EF_{SMS} (Short Message Service) on the USIM

Logically: Status byte set to SMS to be read.
 A chosen test is written in the text body of the EF_{SMS}. This content shall be different from the content stored in EF_{SMS} in the ISIM.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	03	xx	xx	xx	Xx	xx	xx	xx	xx	xx	xx	xx	...	xx

NOTE: "xx" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

At least 9 records.

Logically: Status byte set to empty
 no text is written (Remainder Bytes set to "FF").

Record:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

EF_{SMS} (Short Message Service) on the ISIM

Logically: Status byte set to SMS to be read.
 A chosen test is written in the text body of the EF_{SMS}. This content shall be different from the content stored in EF_{SMS} in the USIM.

Record 1:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex:	03	yy	yy	yy	Yy	yy	yy	yy	yy	yy	yy	yy	...	yy

NOTE: "yy" shall be the appropriate text using the SMS default 7-bit coded alphabet as defined in TS 23.038 [3] which represents the stored SMS.

At least 9 records.

Logically: Status byte set to empty
 no text is written (Remainder Bytes set to "FF").

Record:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex:	00	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...	FF

EF_{SMS} on the USIM and EF_{SMS} on the ISIM shall not share the same memory.

EF_{SMSS} on the USIM and EF_{SMSS} on the ISIM shall not share the same memory.

User Equipment:

The User Equipment is connected to the E-UTRAN/EPC ISIM-UICC.

8.2.6.4.2 Procedure

- The UE is switched on.
- The user shall read the SMS stored on the USIM.
- The UE is switched off

8.2.6.5 Acceptance criteria

- 1) After b) the correct text of the SMS on the ISIM shall be read and be displayed to the user.
- 2) After step b) the EF_{SMS} record 1 of the ISIM shall contains the following values:

Logically: Status byte set to SMS read.
 The entire content of the SMS shall be unchanged.

Record 1:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	...	B176
Hex:	01	yy	yy	yy	yy	yy	yy	yy	yy	yy	yy	yy	...	Yy

- 3) After step b) the EF_{SMS} and EF_{SMSS} on the USIM shall remain unchanged.

8.2.7 Correct storage of an SM on the UICC

8.2.7.1 Definition and applicability

Once a SMS is received by the UE, the Terminal shall store the SM on the USIM, if this is indicated by the class 2 of the SMS (USIM specific SM). For this it is assumed, that at least one relevant SMS field is available on the USIM and indicated as empty

8.2.7.2 Conformance requirement

The received class 2 SMS shall be stored on the USIM in EF_{SMS}. The status of a received SMS, which has not been read yet, shall be set to "3" (SMS to be read).

- TS 23.038 [3], clause 4.
- TS 23.040 [13], clause 10.1, operation 6;
- TS 24.011, clauses 7.3.1.1, 8.2.2, 8.2.3 and 8.2.5.4, Table 8.4 (part 2)
- TS 31.102 [4], clauses 4.2.25.
- TS 24.301 [26], clauses 5.6.3, 5.6.3.3.

8.2.7.3 Test purpose

- 1) To verify that the Terminal stored correctly the class 2 SMS on the USIM.
- 2) To verify that the Terminal sets the status of a received, and not yet read SMS to "3" (SMS to be read).

8.2.7.4 Method of test

8.2.7.4.1 Initial conditions

The default E-UTRAN UICC is used with the following exceptions

- 1) EF_{SMS} (Short Message Service) and EF_{SMSS} (SMS Status) as defined in 8.2.4.4.1.

The NB-SS transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- TAI (MCC/MNC/TAC):246/081/0001
- Access control: unrestricted.

The NB-SS transmits the class 2 short message with the parameters as defined in 8.2.4.4.1.

8.2.7.4.2 Procedure

- a) The ME is switched on and will perform USIM initialization and network registration.
- b) SMS over SGs (DOWNLINK NAS TRANSPORT and UPLINK NAS TRANSPORT messages) is used to send and receive short messages.
- c) Continue with step c) of the Generic Procedure 1 as defined in 8.2.4.4.2.

8.2.7.5 Acceptance criteria

- 1) After step c) the record of the USIM EF_{SMS} which was empty, shall contain the values as defined in 8.2.4.5

8.3 MMS related tests

8.3.1 UE recognising the priority order of MMS Issuer Connectivity Parameters

8.3.1.1 Definition and applicability

An MMS User Agent shall use the MMS related information stored in the USIM, if present, unless otherwise specified by the user. Some of these sets of MMS connectivity parameters are preset by the issuer of the USIM with the first supported set being the default. This information is used to connect to the network for purpose of accessing the MMS Relay/Server.

The MMS connectivity information on the USIM includes preferences for the selection of Interface to Core Network and Bearer parameters. If these are stored on the USIM the MMS-capable UE shall automatically select the Interface to Core Network and Bearer parameters based on their order of precedence defined on the USIM unless otherwise specified by the user.

MMS user preferences information, which is stored on the USIM, shall be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs (e.g. default values for parameters that are often used).

8.3.1.2 Conformance requirement

The Terminal's MMS User Agent shall use the MMS connectivity parameters stored first in the supported parameter sets of EF_{MMSICP} as default parameters to connect to the network for MMS purposes (i.e. sending an User generated MM).

- TS 31.102 [4], clauses 4.2.69 and 5.3.30;
- TS 23.140 [23], clause 7.1.14 and Annex F.

MMS user preferences information, which is stored on the USIM, shall be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs.

- TS 31.102 [4], clauses 4.2.70 and 5.3.31;
- TS 23.140 [23], clause 7.1.14 and Annex F.

8.3.1.3 Test purpose

- 1) To verify that the Terminal's MMS User Agent uses the MMS connectivity parameter stored on the USIM to connect to the network for MMS purposes.
- 2) To verify that the Terminal's MMS User Agent uses the first stored set of supported parameters in EF_{MMSICP} as default.

- 3) To verify that the Terminal's MMS User Agent uses the MMS user preference information stored on the USIM for user assistance in preparation of terminal-originated MMs.

8.3.1.4 Method of test

8.3.1.4.1 Initial conditions

Four MMS Relays/Servers are available:

MMS Relay/Server 1:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator1.com"

Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998625"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2B_OTS1"

Authentication pw: "B2B_password1"

Gateway

Address: "170.187.51.3"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user1"

Authentication pw: "gateway_password1"

MMS Relay/Server 2:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator1.com"

Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998626"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2C_OTS2"

Authentication pw: "B2C_password2"

Gateway

Address: "170.187.51.3"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user1"

Authentication pw: "gateway_password1"

MMS Relay/Server 3:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator1.com"

Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2B-operator1.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU: "No"

Residual Bit Error Rate: " 1×10^{-5} "

SDU-Error-Ratio: " 1×10^{-6} "

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "B2B_OTs1"

Authentication pw: "B2B_password1"

Gateway

Address: "170.187.51.3"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user1"

Authentication pw: "gateway_password1"

MMS Relay/Server 4:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator1.com"

Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2C-operator1.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU: "No"

Residual Bit Error Rate: " 1×10^{-5} "

SDU-Error-Ratio: " 1×10^{-6} "

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "B2C_OTs2"

Authentication pw: "B2C_password2"

Gateway

Address: "170.187.51.3"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user1"

Authentication pw: "gateway_password1"

The default UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

- Local Phone Book available
- User controlled PLMN selector available
- Fixed dialling numbers available
- Barred dialling numbers available

The GSM Access available
The Group Identifier level 1 and level 2 not available
SMS available
SMS Status available
Service no. 33 (Packed Switched Domain) shall be set to '1'
Service no. 52 Multimedia Messaging Service available
Service no. 55 MMS User Connectivity Parameters not available

Coding:	B1	B2	B3	B4	B5	B6	B7
Binary	xx1x xx11	x11x xxxx	xxxx 1x00	xxxx x1xx	xxxx xxx1	xxxx xxxx	x0xx 1xxx

EF_{MMSN}

Logically:
MMS Status: Free space
MMS Implementation : "00"
MMS Notification: "FF FF ... FF" (251 bytes)
Extension file record number: "FF"

Coding:	B1	B2	B3	B4	B5	...	B254	B255
	00	00	00	FF	FF		FF	FF

EF_{MMSICP}

Logically:
MMS Connectivity Parameters
MMS Implementation
MMS Implementation Information : "WAP"
MMS Relay/Server
MMS Relay/Server Address"http://mms-operator1.com"
1st Interface to Core Network and Bearer
Bearer: "GSM-CSD"
Address: "+496998625"
Type of address: "E164"
Speed: "Autobauding"
Call type: "ANALOG_MODEM"
Authentication type: "PAP"
Authentication id: "B2B_OTS1"
Authentication pw: "B2B_password1"
2nd Interface to Core Network and Bearer
Bearer: "GSM-CSD"
Address: "+496998626"
Type of address: "E164"
Speed: "Autobauding"
Call type: "ANALOG_MODEM"
Authentication type: "PAP"
Authentication id: "B2C_OTS2"
Authentication pw: "B2C_password2"
3rd Interface to Core Network and Bearer
Bearer: "GSM-GPRS"
Address: "wap.B2B-operator1.com"
Type of address: "APN"
Call type: "ANALOG_MODEM"
Delivery of erroneous SDU:"No"
Residual Bit Error Rate: "1*10⁻⁵"

SDU-Error-Ratio: "1*10⁻⁶"
 Traffic-class: "Interactive class"
 Maximum bit rate for downlink: "8 kbps"
 Authentication type: "PAP"
 Authentication id: "B2B_OTs1"
 Authentication pw: "B2B_password1"
 4th Interface to Core Network and Bearer
 Bearer: "GSM-GPRS"
 Address: "wap.B2C-operator1.com"
 Type of address: "APN"
 Call type: "ANALOG_MODEM"
 Delivery of erroneous SDU: "No"
 Residual Bit Error Rate: "1*10⁻⁵"
 SDU-Error-Ratio: "1*10⁻⁶"
 Traffic-class: "Interactive class"
 Maximum bit rate for downlink: "8 kbps"
 Authentication type: "PAP"
 Authentication id: "B2C_OTs2"
 Authentication pw: "B2C_password2"
 Gateway:
 Address: "170.187.51.3"
 Type of address: "Ipv4"
 Port : "9201"
 Service: "CO-WSP"
 Authentication type: "HTTP BASIC"
 Authentication id: "gateway_user1"
 Authentication pw: "gateway_password1"

Coding:	AB	82	01	47	80	01	01	81	18	68	74	74
	70	3A	2F	2F	6D	6D	73	2E	6F	70	65	72
	61	74	6F	72	31	2E	63	6F	6D	82	2F	10
	AA	08	2B	34	39	36	39	39	38	36	32	35
	00	09	87	25	C5	0A	90	0C	9A	0D	42	32
	42	11	4F	54	53	31	00	0E	42	32	42	11
	70	61	73	73	77	6F	72	64	31	00	82	2F
	10	AA	08	2B	34	39	36	39	39	38	36	32
	36	00	09	87	25	C5	0A	90	0C	9A	0D	42
	32	43	11	4F	54	53	32	00	0E	42	32	43
	11	70	61	73	73	77	6F	72	64	32	00	82
	43	10	AB	08	03	77	61	70	0D	42	32	42
	2D	6F	70	65	72	61	74	6F	72	31	03	63
	6F	6D	00	09	89	0A	90	31	03	37	70	38
	06	33	60	36	08	0C	9A	0D	42	32	42	11
	4F	54	53	31	00	0E	42	32	42	11	70	61
	73	73	77	6F	72	64	31	00	82	43	10	AB
	08	03	77	61	70	0D	42	32	43	2D	6F	70
	65	72	61	74	6F	72	31	03	63	6F	6D	00
	09	89	0A	90	31	03	37	70	38	06	33	60
	36	08	0C	9A	0D	42	32	43	11	4F	54	53
	32	00	0E	42	32	43	11	70	61	73	73	77
	6F	72	64	32	00	83	43	20	31	37	30	2E
	31	38	37	2E	35	31	2E	33	00	21	85	23
	39	32	30	31	00	24	CB	19	9C	1A	67	61
	74	65	77	61	79	11	75	73	65	72	31	00
	1B	67	61	74	65	77	61	79	11	70	61	73
	73	77	6F	72	64	31	00					

EF_{MMSUP}

Logically:

MMS Implementation

MMS implementation information: "WAP"

MMS User Preference Profile Name: "Greeting cards"

MMS User Information Preference Information

Visibility: "hide"

Delivery report: "yes"

Read-reply: "yes"

Priority: "normal"

Delivery-Time:

Value (absolute): "1-Jan-2003, 12:00:00 AM GMT"

Expiry:

Value (relative): 1104537600 seconds

Coding:	80	01	01	81	0E	47	72	65	65	74	69	6E
	67	20	63	61	72	64	73	82	19	14	80	06
	80	10	80	0F	81	07	07	80	05	00	3E	12
	2F	80	08	06	81	04	41	D5	E8	00		

The UICC is installed into the Terminal and the user has indicated the data stored in EF_{MMSICP} as default.

8.3.1.4.2 Procedure

- The Terminal is powered on and the PIN shall be entered.
- When the Terminal is in idle mode the user shall generate an MM using the MMS User Agent on the Terminal with the default MMS connectivity settings provided by the card issuer and the MMS user preference information stored in the card and send it to "+0123456789".

8.3.1.5 Acceptance criteria

- After step b) the Terminal shall have read the set of supported MMS connectivity parameters stored first in EF_{MMSICP}.
- After step b) the Terminal shall have sent the MM to "+0123456789" using the MMS connectivity parameters stored first in the supported parameter sets in EF_{MMSICP}.
- After step b) the Terminal shall have sent the MM to "+0123456789" using the MMS user preference information stored in EF_{MMSUP}.

8.3.2 UE recognising the priority order of MMS User Connectivity Parameters

8.3.2.1 Definition and applicability

An MMS User Agent shall use the MMS related information stored in the USIM, if present, unless otherwise specified by the user. The MMS connectivity parameters determined by the user, with the first supported set being the default, shall be used to connect to the network for purpose of accessing the MMS Relay/Server.

The MMS connectivity information on the USIM includes preferences for the selection of Interface to Core Network and Bearer parameters. If these are stored on the USIM the MMS-capable UE shall automatically select the Interface to Core Network and Bearer parameters based on their order of precedence defined on the USIM unless otherwise specified by the user.

MMS user preferences information, which is stored on the USIM, shall be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs (e.g. default values for parameters that are often used).

8.3.2.2 Conformance requirement

When using the MMS User Connectivity Parameters to connect to the network for MMS purposes (i.e. sending an User generated MM), the Terminal's MMS User Agent shall use the MMS User Connectivity Parameters with the highest priority (as defined by its position in EF_{MMSUCP}) unless otherwise specified by the user.

- TS 31.102 [4], clauses 4.2.71 and 5.3.32;
- TS 23.140 [23], clause 7.1.14 and Annex F.

MMS user preferences information, which is stored on the USIM, shall be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs.

- TS 31.102 [4], clauses 4.2.70 and 5.3.31;
- TS 23.140 [23], clause 7.1.14 and Annex F.

8.3.2.3 Test purpose

- 1) To verify that the Terminal's MMS User Agent uses the MMS connectivity parameter stored on the USIM to connect to the network for MMS purposes.
- 2) To verify that when using the MMS User Connectivity Parameters to connect to the network for MMS purposes the Terminal's MMS User Agent uses the set of supported parameters in EF MMSUCP with the highest priority (as defined by its position in EF_{MMSUCP}).
- 3) To verify that the Terminal's MMS User Agent uses the MMS user preference information stored on the USIM for user assistance in preparation of terminal-originated MMs.

8.3.2.4 Method of test

8.3.2.4.1 Initial conditions

Four MMS Relays/Servers are available:

MMS Relay/Server 1:

MMS Connectivity Parameters
MMS implementation information: "WAP"
MMS Relay/Server
MMS Relay/Server information: "http://mms-operator2.com"
Interface to Core Network and Bearer
Bearer: "GSM-CSD"
Address: "+495251699"
Type of address: "E164"
Speed: "Autobauding"
Call type: "ANALOG_MODEM"
Authentication type: "PAP"
Authentication id: "UDO_OTS1"
Authentication pw: "Udo_password1"
Gateway
Address: "170.187.51.4"
Type of address: "Ipv4"
Port : "9203"
Service: "CO-WSP"
Authentication type: "HTTP BASIC"
Authentication id: "gateway_user7"
Authentication pw: "gateway_password7"

MMS Relay/Server 2:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator2.com"

Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+495251700"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "UDO_OTS2"

Authentication pw: "Udo_password2"

Gateway

Address: "170.187.51.4"

Type of address: "Ipv4"

Port : "9203"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user7"

Authentication pw: "gateway_password7"

MMS Relay/Server 3:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator2.com"

Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2B-operator2.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU: "No"

Residual Bit Error Rate: "1*10⁻⁵"

SDU-Error-Ratio: "1*10⁻⁶"

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "UDO_OTS1"

Authentication pw: "Udo_password1"

Gateway

Address: "170.187.51.4"

Type of address: "Ipv4"

Port : "9203"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user7"

Authentication pw: "gateway_password7"

MMS Relay/Server 4:

MMS Connectivity Parameters

MMS implementation information: "WAP"
MMS Relay/Server
MMS Relay/Server information: "http://mms-operator2.com"
Interface to Core Network and Bearer
Bearer: "GSM-GPRS"
Address: "wap.B2C-operator2.com"
Type of address: "APN"
Call type: "ANALOG_MODEM"
Delivery of erroneous SDU: "No"
Residual Bit Error Rate: "1*10⁻⁵"
SDU-Error-Ratio: "1*10⁻⁶"
Traffic-class: "Interactive class"
Maximum bit rate for downlink: "8 kbps"
Authentication type: "PAP"
Authentication id: "UDO_OTS2"
Authentication pw: "Udo_password2"
Gateway
Address: "170.187.51.4"
Type of address: "Ipv4"
Port : "9203"
Service: "CO-WSP"
Authentication type: "HTTP BASIC"
Authentication id: "gateway_user7"
Authentication pw: "gateway_password7"

The default UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available
User controlled PLMN selector available
Fixed dialling numbers available
Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
SMS available
SMS Status available
Service no. 33 (Packed Switched Domain) shall be set to '1'
Service no. 52 Multimedia Messaging Service available
Service no. 55 MMS User Connectivity Parameters available

Coding:	B1	B2	B3	B4	B5	B6	B7
Binary	xx1x xx11	x11x xxxx	xxxx 1x00	xxxx x1xx	xxxx xxx1	xxxx xxxx	x1xx 1xxx

EF_{MMSN}

Logically:
MMS Status: Free space
MMS Implementation : "00"
MMS Notification: "FF FF ... FF" (251 bytes)
Extension file record number: "FF"

Coding:	B1	B2	B3	B4	B5	...	B254	B255
	00	00	00	FF	FF		FF	FF

EF_{MMSICP}

Logically: Empty
Coding: B1 B2 ... Bxx
FF FF FF

EF_{MMSUP}

Logically:

MMS Implementation

MMS implementation information: "WAP"

MMS User Preference Profile Name: "Greeting cards"

MMS User Information Preference Information

Visibility: "hide"

Delivery report: "yes"

Read-reply: "yes"

Priority: "normal"

Delivery-Time:

Value (absolute): "1-Jan-2003, 12:00:00 AM GMT"

Expiry:

Value (relative): 1104537600 seconds

Coding:	80	01	01	81	0E	47	72	65	65	74	69	6E
	67	20	63	61	72	64	73	82	19	14	80	06
	80	10	80	0F	81	07	07	80	05	00	3E	12
	2F	80	08	06	81	04	41	D5	E8	00		

EF_{MMSUCP}

Logically:

MMS Connectivity Parameters

MMS Implementation

MMS Implementation Information : "WAP"

MMS Relay/Server

MMS Relay/Server Address"http://mms-operator2.com"

1st Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+495251699"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "UDO_OTS1"

Authentication pw: "Udo_password1"

2nd Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+495251700"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "UDO_OTS2"

Authentication pw: "Udo_password2"

3rd Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2B-operator2.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU:"No"

Residual Bit Error Rate: "1*10⁻⁵"SDU-Error-Ratio: "1*10⁻⁶"

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "UDO_OTS1"

Authentication pw: "Udo_password1"

4th Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2C-operator2.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU:"No"

Residual Bit Error Rate: "1*10⁻⁵"SDU-Error-Ratio: "1*10⁻⁶"

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "UDO_OTS2"

Authentication pw: "Udo_password2"

Gateway:

Address: "170.187.51.4"

Type of address: "Ipv4"

Port : "9203"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user7"

Authentication pw: "gateway_password7"

Coding:	AB	82	01	47	80	01	01	81	18	68	74	74
	70	3A	2F	2F	6D	6D	73	2E	6F	70	65	72

61	74	6F	72	32	2E	63	6F	6D	82	2F	10
AA	08	2B	34	39	35	32	35	31	36	39	39
00	09	87	25	C5	0A	90	0C	9A	0D	55	44
4F	11	4F	54	53	31	00	0E	55	64	6F	11
70	61	73	73	77	6F	72	64	31	00	82	2F
10	AA	08	2B	34	39	35	32	35	31	37	30
30	00	09	87	25	C5	0A	90	0C	9A	0D	55
44	4F	11	4F	54	53	32	00	0E	55	64	6F
11	70	61	73	73	77	6F	72	64	32	00	82
43	10	AB	08	03	77	61	70	0D	42	32	42
2D	6F	70	65	72	61	74	6F	72	32	03	63
6F	6D	00	09	89	0A	90	31	03	37	70	38
06	33	60	36	08	0C	9A	0D	55	44	4F	11
4F	54	53	31	00	0E	55	64	6F	11	70	61
73	73	77	6F	72	64	31	00	82	43	10	AB
08	03	77	61	70	0D	42	32	43	2D	6F	70
65	72	61	74	6F	72	32	03	63	6F	6D	00
09	89	0A	90	31	03	37	70	38	06	33	60
36	08	0C	9A	0D	55	44	4F	11	4F	54	53
32	00	0E	55	64	6F	11	70	61	73	73	77
6F	72	64	32	00	83	3B	20	31	37	30	2E
31	38	37	2E	35	31	2E	34	00	21	85	23
39	32	30	31	00	24	CB	19	9C	1A	67	61
74	65	77	61	79	11	75	73	65	72	37	00
1B	67	61	74	65	77	61	79	11	70	61	73
73	77	6F	72	64	37	00					

The UICC is installed into the Terminal and the user has indicated the data stored in EF_{MMSUCP} as default.

8.3.2.4.2 Procedure

- a) The Terminal is powered on and the PIN shall be entered.
- b) When the Terminal is in idle mode the user shall generate an MM using the MMS User Agent on the Terminal with the default MMS User Connectivity Parameters and the MMS user preference information stored in the card and send it to "+0123456789".

8.3.2.5 Acceptance criteria

- 1) After step b) the Terminal shall have read the first supported set of MMS connectivity parameters stored in EF_{MMSUCP}.
- 2) After step b) the Terminal shall have sent the MM to "+0123456789" using the MMS User Connectivity Parameter set with the highest priority (as defined by its position in EF_{MMSUCP}), which can be used to access an available MMS Relay/Server.
- 3) After step b) the Terminal shall have sent the MM to "+0123456789" using the MMS user preference information stored in EF_{MMSUCP}.

8.3.3 UE recognising the priority order of MMS Issuer Connectivity Parameters over the MMS User Connectivity Parameters

8.3.3.1 Definition and applicability

An MMS User Agent shall use the MMS related information stored in the USIM, if present, unless otherwise specified by the user. This information comprises MMS connectivity information, MMS user preferences and MMS notifications.

MMS user preferences information, which is stored on the USIM, shall be used by an MMS User Agent for user assistance in preparation of terminal-originated MMs (e.g. default values for parameters that are often used).

8.3.3.2 Conformance requirement

MMS connectivity information, on the USIM includes a number of sets of MMS connectivity parameters. Some of these sets of MMS connectivity parameters are preset by the issuer of the USIM with the first set being the default. Such default preset MMS connectivity parameter set shall be selected unless otherwise specified by the user.

- TS 31.102 [4], clauses 4.2.69, 4.7.71, 5.3.30 and 5.3.32;
- TS 23.140 [23], clause 7.1.14 and Annex F

8.3.3.3 Test purpose

- 1) To verify that the Terminal's MMS User Agent uses the MMS connectivity parameter stored on the USIM to connect to the network for MMS purposes.
- 2) To verify that a MMS Issuer Connectivity Parameter set with lower priority (as defined by its position in EF_{MMSICP}) takes precedence over a MMS User Connectivity Parameter set with a higher priority.

8.3.3.4 Method of test

8.3.3.4.1 Initial conditions

Four MMS Relays/Servers are available:

MMS Relay/Server 1:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator3.com"

Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+495251699"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "UDO_OTS1"

Authentication pw: "Udo_password1"

Gateway

Address: "170.187.51.5"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user9"

Authentication pw: "gateway_password9"

MMS Relay/Server 2:

MMS Connectivity Parameters

MMS implementation information: "WAP"
MMS Relay/Server
MMS Relay/Server information: "http://mms-operator3.com"
Interface to Core Network and Bearer
Bearer: "GSM-GPRS"
Address: "wap.B2P-operator3.com"
Type of address: "APN"
Call type: "ANALOG_MODEM"
Delivery of erroneous SDU: "No"
Residual Bit Error Rate: "1*10⁻⁵"
SDU-Error-Ratio: "1*10⁻⁶"
Traffic-class: "Interactive class"
Maximum bit rate for downlink: "8 kbps"
Authentication type: "PAP"
Authentication id: "UDO_OTSI1"
Authentication pw: "Udo_password1"
Gateway
Address: "170.187.51.5"
Type of address: "Ipv4"
Port : "9201"
Service: "CO-WSP"
Authentication type: "HTTP BASIC"
Authentication id: "gateway_user9"
Authentication pw: "gateway_password9"

MMS Relay/Server 3:

MMS Connectivity Parameters
MMS implementation information: "WAP"
MMS Relay/Server
MMS Relay/Server information: "http://mms-operator3.com"
Interface to Core Network and Bearer
Bearer: "GSM-CSD"
Address: "+496998626"
Type of address: "E164"
Speed: "Autobauding"
Call type: "ANALOG_MODEM"
Authentication type: "PAP"
Authentication id: "B2C_OTSI2"
Authentication pw: "B2C_password2"
Gateway
Address: "170.187.51.5"
Type of address: "Ipv4"
Port : "9201"
Service: "CO-WSP"
Authentication type: "HTTP BASIC"
Authentication id: "gateway_user9"
Authentication pw: "gateway_password9"

MMS Relay/Server 4:

MMS Connectivity Parameters

MMS implementation information: "WAP"
MMS Relay/Server
MMS Relay/Server information: "http://mms-operator3.com"
Interface to Core Network and Bearer
Bearer: "GSM-GPRS"
Address: "wap.B2C-operator3.com"
Type of address: "APN"
Call type: "ANALOG_MODEM"
Delivery of erroneous SDU: "No"
Residual Bit Error Rate: "1*10⁻⁵"
SDU-Error-Ratio: "1*10⁻⁶"
Traffic-class: "Interactive class"
Maximum bit rate for downlink: "8 kbps"
Authentication type: "PAP"
Authentication id: "B2C_OTS2"
Authentication pw: "B2C_password2"
Gateway
Address: "170.187.51.5"
Type of address: "Ipv4"
Port : "9201"
Service: "CO-WSP"
Authentication type: "HTTP BASIC"
Authentication id: "gateway_user9"
Authentication pw: "gateway_password9"

The default UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available
User controlled PLMN selector available
Fixed dialling numbers available
Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
SMS available
SMS Status available
Service no. 33 (Packed Switched Domain) shall be set to '1'
Service no. 52 Multimedia Messaging Service available
Service no. 55 MMS User Connectivity Parameters available

Coding:	B1	B2	B3	B4	B5	B6	B7
Binary	xx1x xx11	x11x xxxx	xxxx 1x00	xxxx x1xx	xxxx xxx1	xxxx xxxx	x1xx 1xxx

EF_{MMSN}

Logically:
MMS Status: Free space
MMS Implementation : "00"
MMS Notification: "FF FF ... FF" (251 bytes)
Extension file record number: "FF"

Coding:	B1	B2	B3	B4	B5	...	B254	B255
	00	00	00	FF	FF		FF	FF

EF_{MMSICP}

Logically:

MMS Connectivity Parameters

MMS Implementation

MMS Implementation Information : "WAP"

MMS Relay/Server

MMS Relay/Server Address "http://mms-operator3.com"

1st Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998625"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2B_OTS1"

Authentication pw: "B2B_password1"

2nd Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998626"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2C_OTS2"

Authentication pw: "B2C_password2"

3rd Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2B-operator3.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU: "No"

Residual Bit Error Rate: " $1 \cdot 10^{-5}$ "

SDU-Error-Ratio: " $1 \cdot 10^{-6}$ "

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "B2B_OTS1"

Authentication pw: "B2B_password1"

4th Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2C-operator3.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU: "No"

Residual Bit Error Rate: " $1 \cdot 10^{-5}$ "

SDU-Error-Ratio: " $1 \cdot 10^{-6}$ "

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "B2C_OTS2"

Authentication pw: "B2C_password2"

Gateway:

Address: "170.187.51.5"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user9"

Authentication pw: "gateway_password9"

Coding:	AB	82	01	47	80	01	01	81	18	68	74	74
	70	3A	2F	2F	6D	6D	73	2E	6F	70	65	72
	61	74	6F	72	33	2E	63	6F	6D	82	2F	10
	AA	08	2B	34	39	36	39	39	38	36	32	35

00	09	87	25	C5	0A	90	0C	9A	0D	42	32
42	11	4F	54	53	31	00	0E	42	32	42	11
70	61	73	73	77	6F	72	64	31	00	82	2F
10	AA	08	2B	34	39	36	39	39	38	36	32
36	00	09	87	25	C5	0A	90	0C	9A	0D	42
32	43	11	4F	54	53	32	00	0E	42	32	43
11	70	61	73	73	77	6F	72	64	32	00	82
43	10	AB	08	03	77	61	70	0D	42	32	42
2D	6F	70	65	72	61	74	6F	72	33	03	63
6F	6D	00	09	89	0A	90	31	03	37	70	38
06	33	60	36	08	0C	9A	0D	42	32	42	11
4F	54	53	31	00	0E	42	32	42	11	70	61
73	73	77	6F	72	64	31	00	82	43	10	AB
08	03	77	61	70	0D	42	32	43	2D	6F	70
65	72	61	74	6F	72	33	03	63	6F	6D	00
09	89	0A	90	31	03	37	70	38	06	33	60
36	08	0C	9A	0D	42	32	43	11	4F	54	53
32	00	0E	42	32	43	11	70	61	73	73	77
6F	72	64	32	00	83	3B	20	31	37	30	2E
31	38	37	2E	35	31	2E	35	00	21	85	23
39	32	30	31	00	24	CB	19	9C	1A	67	61
74	65	77	61	79	11	75	73	65	72	39	00
1B	67	61	74	65	77	61	79	11	70	61	73
73	77	6F	72	64	39	00					

EF_{MMSUP}

Logically:

MMS Implementation

MMS implementation information: "WAP"

MMS User Preference Profile Name: "Greeting cards"

MMS User Information Preference Information

Visibility: "hide"

Delivery report: "yes"

Read-reply: "yes"

Priority: "normal"

Delivery-Time:

Value (absolute): "1-Jan-2003, 12:00:00 AM GMT"

Expiry:

Value (relative): 1104537600 seconds

Coding:	80	01	01	81	0E	47	72	65	65	74	69	6E
	67	20	63	61	72	64	73	82	19	14	80	06
	80	10	80	0F	81	07	07	80	05	00	3E	12
	2F	80	08	06	81	04	41	D5	E8	00		

EF_{MMSUCP}

Logically:

MMS Connectivity Parameters

MMS Implementation

MMS Implementation Information : "WAP"

MMS Relay/Server

MMS Relay/Server Address"http://mms-operator3.com"

1st Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+495251699"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "UDO_OTS1"

Authentication pw: "Udo_password1"

2nd Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+495251700"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "UDO_OTS2"

Authentication pw: "Udo_password2"

3rd Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2P-operator3.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU:"No"

Residual Bit Error Rate: "1*10⁻⁵"

SDU-Error-Ratio: "1*10⁻⁶"

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "UDO_OTS1"

Authentication pw: "Udo_password1"

4th Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2C-operator3.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU:"No"

Residual Bit Error Rate: "1*10⁻⁵"

SDU-Error-Ratio: "1*10⁻⁶"

Traffic-class: "Interactive class"

Maximum bit rate for downlink: "8 kbps"

Authentication type: "PAP"

Authentication id: "UDO_OTS2"

Authentication pw: "Udo_password2"

Gateway:

Address: "170.187.51.5"

Type of address: "Ipv4"

Port : "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user9"

Authentication pw: "gateway_password9"

Coding: AB 82 01 47 80 01 01 81 18 68 74 74
70 3A 2F 2F 6D 6D 73 2D 6F 70 65 72

61	74	6F	72	33	2E	63	6F	6D	82	2F	10
AA	08	2B	34	39	35	32	35	31	36	39	39
00	09	87	25	C5	0A	90	0C	9A	0D	55	44
4F	11	4F	54	53	31	00	0E	55	64	6F	11
70	61	73	73	77	6F	72	64	31	00	82	2F
10	AA	08	2B	34	39	35	32	35	31	37	30
30	00	09	87	25	C5	0A	90	0C	9A	0D	55
44	4F	11	4F	54	53	32	00	0E	55	64	6F
11	70	61	73	73	77	6F	72	64	32	00	82
43	10	AB	08	03	77	61	70	0D	42	32	50
2D	6F	70	65	72	61	74	6F	72	33	03	63
6F	6D	00	09	89	0A	90	31	03	37	70	38
06	33	60	36	08	0C	9A	0D	55	44	4F	11
4F	54	53	31	00	0E	55	64	6F	11	70	61
73	73	77	6F	72	64	31	00	82	43	10	AB
08	03	77	61	70	0D	42	32	43	2D	6F	70
65	72	61	74	6F	72	33	03	63	6F	6D	00
09	89	0A	90	31	03	37	70	38	06	33	60
36	08	0C	9A	0D	55	44	4F	11	4F	54	53
32	00	0E	55	64	6F	11	70	61	73	73	77
6F	72	64	32	00	83	3C	20	31	37	30	2E
31	38	37	2E	35	31	2E	35	00	21	85	23
39	32	30	31	00	24	CB	19	9C	1A	67	61
74	65	77	61	79	11	75	73	65	72	39	00
1B	67	61	74	65	77	61	79	11	70	61	73
73	77	6F	72	64	39	00					

The UICC is installed into the Terminal and the user hasn't specified a default MMS connectivity parameter set.

8.3.3.4.2 Procedure

- a) The Terminal is powered on and the PIN shall be entered.
- b) When the Terminal is in idle mode the user shall generate an MM using the MMS User Agent on the Terminal with the default MMS connectivity parameter set and send it to "+0123456789". If no MMS Relay/Server is available for this parameter set, the next MMS connectivity parameter set offered by the MMS User Agent shall be used to send the MM.

8.3.3.5 Acceptance criteria

After step b) the Terminal shall have sent the MM to "+0123456789" using the first supported MMS connectivity parameter set, which can be used to access an available MMS Relay/Server and is stored in EF_{MMSICP}.

8.3.4 Usage of MMS notification

8.3.4.1 Definition and applicability

An MMS User Agent shall use the MMS related information stored in the USIM, if present, unless otherwise specified by the user. This information comprises MMS connectivity information, MMS user preferences and MMS notifications. MMS notifications should be stored on the USIM together with an associated status by a MMS User Agent according to TS 23.140 [23].

8.3.4.2 Conformance requirement

A Terminal supporting MMS notification storage on the USIM shall store MMS notifications together with an associated status on the USIM.

- TS 31.102 [4], clauses 4.2.67 and 5.3.29;
- TS 23.140 [23], clauses 7.1.12, 7.1.14, 8.1.4 and Annex F.

8.3.4.3 Test purpose

To verify that the Terminal stores and updates MMS notifications with the associated status on the USIM correctly.

8.3.4.4 Method of test

8.3.4.4.1 Initial conditions

Two MMS Relays/Servers are available:

MMS Relay/Server 1:

MMS Connectivity Parameters

MMS implementation information: "WAP"

MMS Relay/Server

MMS Relay/Server information: "http://mms-operator1.com"

Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998625"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2B_OTs1"

Authentication pw: "B2B_password1"

Gateway

Address: "170.187.51.3"

Type of address: "Ipv4"

Port: "9201"

Service: "CO-WSP"

Authentication type: "HTTP BASIC"

Authentication id: "gateway_user1"

Authentication pw: "gateway_password1"

MMS Relay/Server 2:

MMS Connectivity Parameters

MMS implementation information: "WAP"
MMS Relay/Server
MMS Relay/Server information: "http://mms-operator1.com"
Interface to Core Network and Bearer
Bearer: "GSM-GPRS"
Address: "wap.B2B-operator1.com"
Type of address: "APN"
Call type: "ANALOG_MODEM"
Delivery of erroneous SDU: "No"
Residual Bit Error Rate: "1*10⁻⁵"
SDU-Error-Ratio: "1*10⁻⁶"
Traffic-class: "Interactive class"
Maximum bit rate for downlink: "8 kbps"
Authentication type: "PAP"
Authentication id: "B2B_OTSI"
Authentication pw: "B2B_password1"
Gateway
Address: "170.187.51.3"
Type of address: "Ipv4"
Port: "9201"
Service: "CO-WSP"
Authentication type: "HTTP BASIC"
Authentication id: "gateway_user1"
Authentication pw: "gateway_password1"

The default UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically: Local Phone Book available
User controlled PLMN selector available
Fixed dialling numbers available
Barred dialling numbers available
The GSM Access available
The Group Identifier level 1 and level 2 not available
SMS available
SMS Status available
Service no. 33 (Packed Switched Domain) shall be set to '1'
Service no. 52 Multimedia Messaging Service available
Service no. 53 Extension 8 available
Service no. 55 MMS User Connectivity Parameters not available

Coding:	B1	B2	B3	B4	B5	B6	B7
Binary	xx1x xx11	x11x xxxx	xxxx 1x00	xxxx x1xx	xxxx xxx1	xxxx xxxx	x0x1 1xxx

EF_{MMSN}

Logically:
MMS Status: Free space
MMS Implementation : "00"
MMS Notification: "FF FF ... FF" (251 bytes)
Extension file record number: "FF"

Coding:	B1	B2	B3	B4	B5	...	B254	B255
	00	00	00	FF	FF		FF	FF

EF_{MMSUP}

Logically:

MMS Implementation

MMS implementation information: "WAP"

MMS User Preference Profile Name: "Greeting cards"

MMS User Information Preference Information

Visibility: "hide"

Delivery report: "yes"

Read-reply: "yes"

Priority: "normal"

Delivery-Time:

Value (absolute): "1-Jan-2003, 12:00:00 AM GMT"

Expiry:

Value (relative): 1104537600 seconds

Coding:	80	01	01	81	0E	47	72	65	65	74	69	6E
	67	20	63	61	72	64	73	82	19	14	80	06
	80	10	80	0F	81	07	07	80	05	00	3E	12
	2F	80	08	06	81	04	41	D5	E8	00		

EF_{MMSICP}

Logically:

MMS Connectivity Parameters

MMS Implementation

MMS Implementation Information : "WAP"

MMS Relay/Server

MMS Relay/Server Address"http://mms-operator1.com"

1st Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998625"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2B_OTS1"

Authentication pw: "B2B_password1"

2nd Interface to Core Network and Bearer

Bearer: "GSM-CSD"

Address: "+496998626"

Type of address: "E164"

Speed: "Autobauding"

Call type: "ANALOG_MODEM"

Authentication type: "PAP"

Authentication id: "B2C_OTS2"

Authentication pw: "B2C_password2"

3rd Interface to Core Network and Bearer

Bearer: "GSM-GPRS"

Address: "wap.B2B-operator1.com"

Type of address: "APN"

Call type: "ANALOG_MODEM"

Delivery of erroneous SDU: "No"

Residual Bit Error Rate: "1*10⁻⁵"

SDU-Error-Ratio: "1*10⁻⁶"
 Traffic-class: "Interactive class"
 Maximum bit rate for downlink: "8 kbps"
 Authentication type: "PAP"
 Authentication id: "B2B_OTs1"
 Authentication pw: "B2B_password1"
 4th Interface to Core Network and Bearer
 Bearer: "GSM-GPRS"
 Address: "wap.B2C-operator1.com"
 Type of address: "APN"
 Call type: "ANALOG_MODEM"
 Delivery of erroneous SDU: "No"
 Residual Bit Error Rate: "1*10⁻⁵"
 SDU-Error-Ratio: "1*10⁻⁶"
 Traffic-class: "Interactive class"
 Maximum bit rate for downlink: "8 kbps"
 Authentication type: "PAP"
 Authentication id: "B2C_OTs2"
 Authentication pw: "B2C_password2"
 Gateway:
 Address: "170.187.51.3"
 Type of address: "Ipv4"
 Port: "9201"
 Service: "CO-WSP"
 Authentication type: "HTTP BASIC"
 Authentication id: "gateway_user1"
 Authentication pw: "gateway_password1"

Coding:	AB	82	01	47	80	01	01	81	18	68	74	74
	70	3A	2F	2F	6D	6D	73	2E	6F	70	65	72
	61	74	6F	72	31	2E	63	6F	6D	82	2F	10
	AA	08	2B	34	39	36	39	39	38	36	32	35
	00	09	87	25	C5	0A	90	0C	9A	0D	42	32
	42	11	4F	54	53	31	00	0E	42	32	42	11
	70	61	73	73	77	6F	72	64	31	00	82	2F
	10	AA	08	2B	34	39	36	39	39	38	36	32
	36	00	09	87	25	C5	0A	90	0C	9A	0D	42
	32	43	11	4F	54	53	32	00	0E	42	32	43
	11	70	61	73	73	77	6F	72	64	32	00	82
	43	10	AB	08	03	77	61	70	0D	42	32	42
	2D	6F	70	65	72	61	74	6F	72	31	03	63
	6F	6D	00	09	89	0A	90	31	03	37	70	38
	06	33	60	36	08	0C	9A	0D	42	32	42	11
	4F	54	53	31	00	0E	42	32	42	11	70	61
	73	73	77	6F	72	64	31	00	82	43	10	AB
	08	03	77	61	70	0D	42	32	43	2D	6F	70
	65	72	61	74	6F	72	31	03	63	6F	6D	00
	09	89	0A	90	31	03	37	70	38	06	33	60
	36	08	0C	9A	0D	42	32	43	11	4F	54	53
	32	00	0E	42	32	43	11	70	61	73	73	77
	6F	72	64	32	00	83	3C	20	31	37	30	2E
	31	38	37	2E	35	31	2E	33	00	21	85	23
	39	32	30	31	00	24	CB	19	9C	1A	67	61
	74	65	77	61	79	11	75	73	65	72	31	00
	1B	67	61	74	65	77	61	79	11	70	61	73
	73	77	6F	72	64	31	00					

EF_{EXT8}

Logically:

At least 10 records.

Record 1 to 10: Free space with 253 bytes for extension data

Record 1:

Coding:	B1	B2	B3	B4	...	...	B255
Hex	00	FF	FF	FF			FF

The UICC is installed into the Terminal and the user hasn't specified a default MMS connectivity parameter set.

8.3.4.4.2 Procedure

- a) The terminal is powered on and the PIN shall be entered.
- b) When the terminal is in idle mode a MM shall be sent to the terminal via the MMS Relay/Server 1 or 2, dependent on the bearer supported by the terminal. This MMS Relay/Server shall then generate a notification to the Terminal's MMS User Agent. With the MM notification the MMS User Agent shall receive a message reference that can be used for retrieving the MM from this MMS Relay/Server.

The MM shall result in a MMS notification with the following predefined values:

X-Mms Message Type:	"m-notification-ind" (0x82)
X-Mms-Transaction-ID:	"01"
X-Mms-MMS-Version:	"1.0"
From:	not present (hidden)
Subject:	"MM for you"
X-Mms-Content-Location:	"http://mms-operator1/MMBox/ID-007-12345678"

- c) The user shall read the MMS notification stored on the USIM.
- d) The user shall retrieve the MM stored on the MMS Relay/Server used in step b).
- e) The user shall forward the MM to "+0123456789" using the default MMS Issuer Connectivity Parameters stored on the USIM.
- f) A MM shall be sent to the terminal via the same MMS Relay/Server as in step b). This MMS Relay/Server shall then generate a notification to the Terminal's MMS User Agent. With the MM notification the MMS User Agent shall receive a message reference that can be used for retrieving the MM from this MMS Relay/Server.

The MM shall result in a MMS notification with the following predefined values:

X-Mms Message Type:	"m-notification-ind" (0x82)
X-Mms-Transaction-ID:	"02"
X-Mms-MMS-Version:	"1.0"
From:	" +0987123654"
Subject:	"Urgent MM"
X-Mms-Content-Location:	"http://mms-operator1/MMBox/ID-007-02468024"

- g) The user shall read the MMS notification stored on the USIM.
- h) The user shall reject the MM stored on the MMS Relay/Server used in step b).

8.3.4.5 Acceptance criteria

- 1) After step b) the MMS User Agent on the terminal shall have stored the MMS notification on the USIM with the values defined in step b) of 8.4.4.4.2, the associated status shall have been set to "Used space, notification not read, MM not retrieved" and the MMS User Agent shall indicate to the user that a MMS notification has been received.

- 2) After step c) the status of the MMS notification stored on the USIM shall have been set to "used space, notification read, MM not retrieved".
- 3) After step d) the MMS user agent shall have retrieved the MM from the MMS Relay/Server 1 and the status of the MMS notification stored on the USIM shall have either been set to "used space, notification read, MM retrieved" or the MMS notification shall have been deleted and the associated shall have been set to "Free space".
- 4) After step e) the terminal shall have read the set of MMS Issuer Connectivity Parameters stored first in EF_{MMSICP} and shall have forward the MM to "+0123456789" using the MMS Relay/Server 1. The MMS notification shall have either been set to "used space, notification read, MM forwarded" or the MMS notification shall have been deleted and the associated shall have been set to "Free space".
- 5) After step f) the MMS User Agent on the terminal shall have stored the MMS notification on the USIM with the values defined in step f) of 8.4.4.4.2, the associated status shall have been set to "Used space, notification not read, MM not retrieved" and the MMS User Agent shall indicate to the user that a MMS notification has been received.
- 6) After step g) the status of the MMS notification stored on the USIM shall have been set to "used space, notification read, MM not retrieved".
- 7) After step h) the MMS user agent shall have not retrieved the MM from the MMS Relay/Server 1 and the status of the MMS notification stored on the USIM shall have either been set to "used space, notification read, MM rejected" or the MMS notification shall have been deleted and the associated shall have been set to "Free space".

8.4 UICC presence detection

8.4.1 Definition and applicability

To ensure that the UICC has not been removed during a card session, the Terminal sends in case of inactivity on the UICC-Terminal interface, at frequent intervals, a STATUS command during each call.

This procedure shall be used in addition to a mechanical or other devices used to detect the removal of a UICC.

8.4.2 Conformance requirement

A STATUS command shall be issued within all 30 second periods of inactivity on the UICC-Terminal interface during a call. Inactivity in this case is defined as starting at the end of the last communication or the last issued STATUS command. If no response data is received to this STATUS command, then the call shall be terminated as soon as possible but at least within 5s after the STATUS command has been sent. If the DF indicated in response to a STATUS command is not the same as that which was indicated in the previous response, or accessed by the previous command, then the call shall be terminated as soon as possible but at least within 5 seconds after the response data has been received. Here a call covers a circuit switched call, and/or an active PDP context.

The ME may suspend the UICC presence detection based on STATUS commands in case it has an active PDP context, but has not exchanged any data with the network within a 30s period of inactivity on the UICC-ME interface, and resume it as soon as data is exchanged with the network, sending immediately a new STATUS command.

- TS 31.102 [4], clauses 5.1.9
- ETSI TS 102 221 [5], clause 14.5.2.

8.4.3 Test purpose

- 1) To verify that there are no periods of inactivity on the UICC-Terminal interface greater than 30 seconds during a call.
- 2) To verify that the terminal terminates a call within 5 s at the latest after having received an invalid response to the STATUS command.

8.4.4 Method of test

8.4.4.1 Initial conditions

The terminal shall be connected to the UICC simulator. All elementary files shall be coded as default.

8.4.4.2 Procedure

- a) A call shall be set up using the generic call setup for circuit switched call or to activate a PDP context.

NOTE: In case of PDP context for a terminal that supports Rel-12 or later, exchange of data with the network may be required to guarantee the correct result of the test.

- b) The UICC simulator shall monitor the time of periods of inactivity on the UICC-Terminal interface.

- c) After 3 minutes, the call or PDP context shall be cleared.

- d) A call shall be set up using the generic call setup for circuit switched call or to activate a PDP context.

NOTE: In case of PDP context for a terminal that supports Rel-12 or later, exchange of data with the network may be required to guarantee the correct result of the test.

- e) After one minute after the call was successfully set up, the UICC simulator shall respond to a STATUS command with the response data indicating a DF different from the current DF.

8.4.5 Acceptance criteria

- 1) During step b), the time of periods of inactivity on the UICC-Terminal interface shall not be longer than 30 seconds.
- 2) After step e), the Terminal shall terminate the call or PDP context within 5 s at the latest after having received the wrong response to the STATUS command.

8.5 UICC presence detection when connected to E-UTRAN/EPC

8.5.1 Definition and applicability

To ensure that the UICC has not been removed during a card session, the Terminal sends in case of inactivity on the UICC-Terminal interface, at frequent intervals, a STATUS command during each call or active PDP context.

8.5.2 Conformance requirement

A STATUS command shall be issued within all 30 second periods of inactivity on the UICC-Terminal interface during an active PDP context. Inactivity in this case is defined as starting at the end of the last communication or the last issued STATUS command. If no response data is received to this STATUS command, then the active PDP context shall be terminated as soon as possible but at least within 5s after the STATUS command has been sent. If the DF indicated in response to a STATUS command is not the same as that which was indicated in the previous response, or accessed by the previous command, then the active PDP context shall be terminated as soon as possible but at least within 5 seconds after the response data has been received.

The ME may suspend the UICC presence detection based on STATUS commands in case it has an active EPS bearer context, but has not exchanged any data with the network within a 30s period of inactivity on the UICC-ME interface, and resume it as soon as data is exchanged with the network, sending immediately a new STATUS command.

There is 1:1 mapping between one PDP context and one EPS Bearer.

- TS 31.102 [4], clauses 5.1.9
- ETSI TS 102 221 [5], clause 14.5.2.

- TS 23.060 [25], clause 9.2.1A.

8.5.3 Test purpose

- 1) To verify that there are no periods of inactivity on the UICC-Terminal interface greater than 30 seconds during an active PDP context.
- 2) To verify that the terminal terminates the default EPS Bearer within 5 s at the latest after having received an invalid response to the STATUS command.

8.5.4 Method of test

8.5.4.1 Initial conditions

The terminal is connected to the USIM Simulator and the E-USS/NB-SS.

The default E-UTRAN UICC is used.

8.5.4.2 Procedure

- a) The terminal is switched on, performs the Attach procedure to the E-USS/NB-SS and establishes the default EPS bearer.

NOTE: For a terminal that supports Rel-12 or later, exchange of data with the network may be required to guarantee the correct result of the test.

- b) The UICC simulator shall monitor the time of periods of inactivity on the UICC-Terminal interface.
- c) Step b) shall be performed for 3 minutes.
- d) After one minute after the end of step c), the UICC simulator shall respond to a STATUS command with the response data indicating a DF different from the current DF.

8.5.5 Acceptance criteria

- 1) During step c), the time of periods of inactivity on the UICC-Terminal interface shall not be longer than 30 seconds.
- 2) After step d), the Terminal shall terminate the default EPS bearer within 5 s at the latest after having received the wrong response to the STATUS command.

9USIM service handling

9.1Access Point Name Control List handling

9.1.1Access Point Name Control List handling for terminals supporting ACL

9.1.1.1Definition and applicability

This EF_{ACL} contains the list of allowed APNs (Access Point Names).When the APN Control List service is enabled, the ME shall check that the entire APN of any PDP context is listed in EF_{ACL} before requesting this PDP context activation from the network. If the APN is not present in EF_{ACL}, the ME shall not request the corresponding PDP context activation from the network.

9.1.1.2Conformance requirement

The terminal shall support the APN Control List service as defined in TS 31.102 [4], clauses 5.1.1.2 and 5.3.14.

Reference:

- TS 31.102 [4], clauses 4.2.8, 4.2.48, 5.1.1.2 and 5.3.14;
- TS 23.060 [25], clause 9.2.

9.1.1.3Test purpose

- 1) To verify that the terminal takes into account the status of the APN Control List service as indicated in EF_{UST} and EF_{EST}.
- 2) To verify that the terminal checks that the entire APN of any PDP context is listed in EF_{ACL} before requesting this PDP context activation from the network if the ACL service is enabled.
- 3) To verify that the terminal does not request the corresponding PDP context activation from the network if the ACL service is enabled and the APN is not present in EF_{ACL}.

9.1.1.4Method of test

9.1.1.4.1Initial conditions

The terminal is connected to the USIM Simulator and the (U)SS.

The default USIM is used with the following exceptions:

The APN Control List (ACL) shall be allocated and activated in the USIM Service Table and enabled in the Enabled Service Table.

EF_{ACL} shall be present with the following values:

EF_{ACL} (Access Point Control List)

Logically:		Number of available bytes: 64										
		Number of APNs: 3										
		1 st APN: test.test										
		2 nd APN: 3gpp.test										
		3 rd APN: 2gpp.test										
Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Coding:	03	DD	0A	04	74	65	73	74	04	74	65	73

B13 74	B14 DD	B15 0A	B16 04	B17 33	B18 67	B19 70	B20 70	B21 04	B22 74	B23 65	B24 73
B25 74	B26 DD	B27 0A	B28 04	B29 32	B30 67	B31 70	B32 70	B33 04	B34 74	B35 65	B36 73
B37 74	B38 FF	...	B64 FF								

9.1.1.4.2 Procedure

- a) The terminal is switched on and the USIM application shall be activated.
- b) The user shall request a PDP context activation to "1gpp.test".
- c) The user shall request a PDP context activation to "3gpp.test".
- d) The user shall deactivate the PDP context.
- e) The user shall disable the APN Control List service. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- f) The user shall request a PDP context activation to "1gpp.test".
- g) The user shall deactivate the PDP context and shall switch the terminal off and then switch on again.
- h) The user shall enable the APN Control List service. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- i) The user shall request a PDP context activation to "1ppp.net".
- j) The terminal is switched off and on.
- k) The user shall add the APN "1ppp.net" to the APN Control List. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- l) The user shall request a PDP context activation to "1ppp.net".
- m) The user shall deactivate the PDP context and switch off the terminal.

9.1.1.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application, shall have read the status of the ACL service in EF_{UST} and EF_{EST} and be in updated idle mode on the (U)SS.
- 2) The terminal shall have not requested a PDP context activation in step b).
- 3) After step c) the PDP context shall have been activated.
- 4) After step d) the PDP context shall have been deactivated.
- 5) After step e) the APN Control List service shall have been set to disabled in EF_{EST}.
- 6) After step f) the PDP context shall have been activated.
- 7) After step g) the PDP context shall have been deactivated.
- 8) After step h) the APN Control List service shall have been set to enabled in EF_{EST}.
- 9) The terminal shall not have requested a PDP context activation in step i).
- 10) After step k) the APN "1ppp.net" shall have been added to the APN Control List in EF_{ACL}.
- 11) After step l) the PDP context shall have been activated.

9.1.2 Network provided APN handling for terminals supporting ACL

9.1.2.1 Definition and applicability

This EF_{ACL} contains the list of allowed APNs (Access Point Names). When the APN Control List service is enabled, the ME shall check that the entire APN of any PDP context is listed in EF_{ACL} before requesting this PDP context activation from the network. If the APN is not present in EF_{ACL}, the ME shall not request the corresponding PDP context activation from the network.

In the case that the APN Control List is enabled and no APN is indicated in the PDP context request, indicating that a network provided APN is to be used, then the ME shall only request the PDP context activation if "network provided APN" is contained within EF_{ACL}.

9.1.2.2 Conformance requirement

The terminal shall support the APN Control List service as defined in TS 31.102 [4], clauses 5.1.1.2 and 5.3.14.

Reference:

- TS 31.102 [4], clauses 4.2.8, 4.2.48, 5.1.1.2 and 5.3.14;
- TS 23.060 [25], clause 9.2.

9.1.2.3 Test purpose

- 1) To verify that if ACL is enabled and if no APN is indicated in the PDP context the terminal request the PDP context activation only if "network provided APN" is contained within EF_{ACL}.
- 2) To verify that the user is able to set an APN in EF_{ACL} entry to the value "network provided APN".
- 3) To verify that the minimum set of APN entries in EF_{ACL} is ensured when the user deletes APN entries.

9.1.2.4 Method of test

9.1.2.4.1 Initial conditions

The terminal is connected to the USIM Simulator and the (U)SS.

The default USIM is used with the following exceptions:

The APN Control List (ACL) shall be allocated and activated in the USIM Service Table and enabled in the Enabled Service Table.

EF_{ACL} shall be present with the following values:

EF_{ACL} (Access Point Control List)

Logically: Number of available bytes: 64
 Number of APNs: 3
 1st APN: test.test
 2nd APN: 3gpp.test
 3rd APN: 2gpp.test

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Coding:	03	DD	0A	04	74	65	73	74	04	74	65	73
	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24
	74	DD	0A	04	33	67	70	70	04	74	65	73
	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35	B36
	74	DD	0A	04	32	67	70	70	04	74	65	73
	B37	B38	...	B64								
	74	FF	...	FF								

9.1.2.4.2 Procedure

- a) The terminal is switched on and the USIM application shall be activated.
- b) The user shall add "network provided APN" to the APN Control List in EF_{ACL} by using an MMI dependent option in the terminal. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- c) The user shall request a PDP context activation to "3gpp.test".
- d) The user shall deactivate the PDP context.
- e) The user shall request a PDP context activation without indicating an APN.
- f) The user shall deactivate the PDP context.
- g) The user shall delete "network provided APN" from the APN Control List in EF_{ACL} by using an MMI dependent option in the terminal. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- h) The user shall request a PDP context activation to "3gpp.test".
- i) The user shall deactivate the PDP context.
- j) The user shall request a PDP context activation without indicating an APN.
- k) The user shall try to delete all APNs from the APN Control List in EF_{ACL} by using an MMI dependent option in the terminal. When the terminal indicates that at least one APN entry shall remain, the user shall set this entry to "network provided APN". When prompted to enter PIN2, the user shall present the correct PIN2 value.
- l) The user shall switch off the terminal.

9.1.2.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application, shall have read the status of the ACL service in EF_{UST} and EF_{EST} and be in updated idle mode on the (U)SS.
- 2) After step b) EF_{ACL} shall contain an entry for "network provided APN".
- 3) After step c) the PDP context shall have been activated.
- 4) After step d) the PDP context shall have been deactivated.
- 5) After step e) the PDP context shall have been activated.
- 6) After step f) the PDP context shall have been deactivated.
- 7) After step g) EF_{ACL} shall not contain an entry for "network provided APN".
- 8) After step h) the PDP context shall have been activated.
- 9) After step i) the PDP context shall have been deactivated.
- 10) The terminal shall have not requested a PDP context activation in step j).
- 11) After step k) EF_{ACL} shall contain one APN entry with the value "network provided APN" and the corresponding number of APNs in EF_{ACL} shall be 1.

9.1.3 Access Point Name Control List handling for terminals not supporting ACL

9.1.3.1 Definition and applicability

This EF_{ACL} contains the list of allowed APNs (Access Point Names). When the APN Control List service is enabled, the ME shall check that the entire APN of any PDP context is listed in EF_{ACL} before requesting this PDP context activation

from the network. If the APN is not present in EF_{ACL}, the ME shall not request the corresponding PDP context activation from the network.

If ACL is enabled, an ME which does not support ACL shall not send any APN to the network.

9.1.3.2 Conformance requirement

An ME which does not support ACL shall not send any APN to the network if ACL is enabled.

Reference:

- TS 31.102 [4], 5.1.1.2.

9.1.3.3 Test purpose

To verify that if ACL is enabled, an ME which does not support ACL, does not send any APN to the network to request a PDP context activation.

9.1.3.4 Method of test

9.1.3.4.1 Initial conditions

The terminal is connected to the USIM Simulator and the (U)SS.

The default USIM is used with the following exceptions:

The APN Control List (ACL) shall be allocated and activated in the USIM Service Table and enabled in the Enabled Service Table.

EF_{ACL} shall be present with the following values:

EF_{ACL} (Access Point Control List)

Logically: Number of available bytes: 64
 Number of APNs: 3
 1st APN: test.test
 2nd APN: 3gpp.test
 3rd APN: 2gpp.test

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Coding:	03	DD	0A	04	74	65	73	74	04	74	65	73
	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24
	74	DD	0A	04	33	67	70	70	04	74	65	73
	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35	B36
	74	DD	0A	04	32	67	70	70	04	74	65	73
	B37	B38	...	B64								
	74	FF	...	FF								

9.1.3.4.2 Procedure

- a) The terminal is switched on and the USIM application shall be activated.
- b) The user shall request a PDP context activation to "3gpp.test".
- c) The terminal shall be switched off.

9.1.3.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application, shall have read the status of the ACL service in EF_{UST} and EF_{EST} and be in updated idle mode on the (U)SS.

- 2) The terminal shall not have sent any APN to the network in step b).

9.1.4 Access Point Name Control List handling for terminals supporting ACL connected to E-UTRAN/EPC

9.1.4.1 Definition and applicability

This EF_{ACL} contains the list of allowed APNs (Access Point Names). If the APN Control List service is enabled and the ME is to provide an APN as part of attach for PDN connectivity, then the ME shall verify that the APN value is present in the EF_{ACL} and if it is not the ME shall not proceed with the attach procedure. If the APN Control List service is enabled and the ME does not intend to provide an APN as part of the attach for PDN connectivity and use a network provided APN, the ME shall not check if "network provided APN" is contained within EF_{ACL}.

There is 1:1 mapping between one PDP context and one EPS Bearer.

Some terminals might not support the enablement or the disablement of the APN Control List service or the modification of the APN Control List. In these cases, the test sequence below provides separate branches.

9.1.4.2 Conformance requirement

The terminal shall support the APN Control List service as defined in TS 31.102 [4], clauses 5.1.1.2 and 5.3.14.

Reference:

- TS 31.102 [4], clauses 4.2.8, 4.2.48, 5.1.1.2 and 5.3.14;
- TS 23.060 [25], clause 9.2, 9.2.1A.

9.1.4.3 Test purpose

- 1) To verify that the terminal takes into account the status of the APN Control List service as indicated in EF_{UST} and EF_{EST}.
- 2) To verify that the terminal checks that the entire APN of any EPS Bearer is listed in EF_{ACL} before requesting this EPS Bearer activation from the network if the ACL service is enabled.
- 3) To verify that the terminal does not request the corresponding EPS Bearer activation from the network if the ACL service is enabled and the APN is not present in EF_{ACL}.
- 4) To verify that the terminal does not check that the network provided APN is present in EF_{ACL} during the initial attach procedure.

9.1.4.4 Method of test

9.1.4.4.1 Initial conditions

The terminal is connected to the USIM Simulator and the E-USS.

The terminal is configured to use the network provided APN for the initial attach procedure.

The default E-UTRAN UICC is used with the following exceptions:

The APN Control List (ACL) shall be allocated and activated in the USIM Service Table and enabled in the Enabled Service Table.

EF_{ACL} shall be present with the following values:

EF_{ACL} (Access Point Control List)

Logically: Number of available bytes: 64
 Number of APNs: 3
 1st APN: test.test

		2 nd APN:		3gpp.test								
		3 rd APN:		2gpp.test								
Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Coding:	03	DD	0A	04	74	65	73	74	04	74	65	73
	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24
	74	DD	0A	04	33	67	70	70	04	74	65	73
	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35	B36
	74	DD	0A	04	32	67	70	70	04	74	65	73
	B37	B38	...	B64								
	74	FF	...	FF								

9.1.4.4.2 Procedure

- a) The terminal is switched on, the USIM application shall be activated and the terminal shall successfully attach the E-UTRAN.
- b) The user shall request PDN connectivity to "1gpp.test".
- c) The user shall request PDN connectivity to "3gpp.test".
- d) The user shall deactivate the PDN connectivity to "3gpp.test".
- e) If user interface does not have support to disable the APN Control List service, proceed to step l).
- f) The user shall disable the APN Control List service. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- g) The user shall request PDN connectivity to "1gpp.test".
- h) The user shall deactivate the PDN connectivity to "1gpp.test" and shall switch the terminal off and then switch on again.
- i) The user shall enable the APN Control List service. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- j) The user shall request PDN connectivity to "1ppp.net".
- k) The terminal is switched off and on.
- l) If user interface does not have support to add APN to APN Control List, proceed to step p).
- m) The user shall add the APN "1ppp.net" to the APN Control List. When prompted to enter PIN2, the user shall present the correct PIN2 value.
- n) The user shall request PDN connectivity to "1ppp.net".
- o) The user shall deactivate the PDN connectivity.
- p) Switch off the terminal.

9.1.4.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application, shall have read the status of the ACL service in EF_{UST} and EF_{EST} and be in updated idle mode on the E-USS.
- 2) The terminal shall have not requested PDN connectivity in step b).
- 3) After step c) PDN connectivity shall have been activated.
- 4) After step d) PDN connectivity shall have been deactivated.
- 5) After step f) the APN Control List service shall have been set to disabled in EF_{EST}.

- 6) After step g) PDN connectivity shall have been activated.
- 7) After step h) PDN connectivity shall have been deactivated.
- 8) After step i) the APN Control List service shall have been set to enabled in EF_{EST}.
- 9) The terminal shall not have requested PDN connectivity in step j).
- 10) After step m) the APN "1ppp.net" shall have been added to the APN Control List in EF_{ACL}.
- 11) After step n) PDN connectivity shall have been activated.
- 12) After step o) PDN connectivity shall have been deactivated.

9.1.5 Void9.1.6 Void

9.2 Service Dialling Numbers handling

9.2.1 Definition and applicability

The Service Dialling Numbers feature allows for the storage of numbers related to services offered by the network operator/service provider in the SIM/USIM (e.g. customer care). The user can use these telephone numbers to make outgoing calls, but the access for updating of the numbers shall be under the control of the operator.

9.2.2 Conformance requirement

The terminal shall support the Service Dialling Numbers service as defined in TS 31.102 [4], clauses 4.2.8 and 4.2.29.

Reference:

- TS 31.102 [4], clauses 4.2.8, 4.2.29 and 4.2.31;
- TS 22.101 [11], clause A.23.

9.2.3 Test purpose

- 1) To verify that the terminal takes into account the status of the Service Dialling Numbers service as indicated in EF_{UST}.
- 2) To verify that the user can use the Service Dialling Numbers to make outgoing calls.
- 3) To verify that the terminal is able to handle SDNs with an extended dialling number string.
- 4) To verify that the terminal is able to handle an empty alpha identifier in EF_{SDN}.
- 5) To verify that the terminal is able to handle an alpha identifier of maximum length in EF_{SDN}.

9.2.4 Method of test

9.2.4.1 Initial conditions

The terminal is connected to the USIM Simulator and the (U)SS.

The default USIM is used with the following exceptions:

The Service Dialling Numbers (SDN) shall be allocated and activated in the USIM Service Table.

EF_{SDN} shall be present with the following values:

EF_{SDN} (Service Dialling Numbers)

FF	0B	91	10	32	54	76	98	10	32	54	76
B253 98	B254 FF	B255 01									

Record 4: Length of alpha identifier: 241 characters;
 Alpha identifier: empty;
 Length of BCD number: 03;
 TON and NPI: Telephony and International;
 Dialed number: "007";
 CCI2: 'FF';
 Ext3: 'FF'.

Record 4:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...
	B241 FF	B242 03	B243 91	B244 00	B245 F7	B246 FF	B247 FF	B248 FF	B249 FF	B250 FF	B251 FF	B252 FF
	B253 FF	B254 FF	B255 FF									

Record 5: Length of alpha identifier: 241 characters;
 Alpha identifier: empty;
 Length of BCD number: 3;
 TON and NPI: Telephony and International;
 Dialed number: "008";
 CCI2: 'FF';
 Ext3: 'FF'.

Record 5:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	...
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	...
	B241 FF	B242 03	B243 91	B244 00	B245 F8	B246 FF	B247 FF	B248 FF	B249 FF	B250 FF	B251 FF	B252 FF
	B253 FF	B254 FF	B255 FF									

EF_{EXT3} (Extension 3)

Logically: 5 records, 4 records empty. Access to update EF_{EXT3} shall be granted by usage of ADM1 only.

Record 1: Record type: '02'
 Extension data: "012345";
 Identifier: 'FF'.

Record 1:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13
Hex	02	03	10	32	54	FF	FF	FF	FF	FF	FF	FF	FF

9.2.4.2 Procedure

- a) The terminal is switched on and the USIM application shall be activated.

- b) The user shall use an MMI dependent procedure to set up a call to the dialling number associated with the alpha identifier
"Hotline001122334455667788ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789abcdefghijklmnopqrstuvwxyz0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789abcdefghijklmnopqrstuvwxyz0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789" in record 1 of EF_{SDN}.
- c) The user shall end the call.
- d) The user shall use an MMI dependent procedure to set up a call to the dialling number associated with the
"Hotline003" in record 3 of EF_{SDN}.
- e) The user shall end the call.
- f) The user shall use an MMI dependent procedure to select and to set up a call to the dialling number "+007"
stored in record 4 of EF_{SDN}.
- g) The user shall end the call and switch the terminal off.

9.2.5 Acceptance criteria

- 1) After step a) the terminal shall have activated the USIM application and shall have read the status of the SDN service in EF_{UST}.
- 2) After step b) the terminal shall have read record 1 of EF_{SDN} and a call to "+22223333" shall have been established.
- 3) After step c) the call shall have been terminated.
- 4) After step d) the terminal shall have read record 3 of EF_{SDN} and record 1 of EF_{EXT1} and a call to "+01234567890123456789012345" shall have been established.
- 5) After step e) the call shall have been terminated.
- 6) After step f) the terminal shall have read record 4 of EF_{SDN} and a call to "+007" shall have been established.

10 CSG list handling

10.1 CSG list handling for E-UTRA

10.1.1 Automatic CSG selection in E-UTRA with CSG list on USIM, success

10.1.1.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

10.1.1.2 Conformance requirement

When a UE in idle mode detects the presence of a permissible CSG cell (a CSG cell whose CSG identity is in the UE's permitted CSG list), the UE shall select the CSG cell.

The ME shall read the allowed CSG IDs from EF_{ACSGL} in order to perform HNB selection procedures. The lists in EF_{ACSGL} shall take precedence over the list stored in the ME non-volatile memory.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

- TS 22.011 [6], clause 8.2.2.1;
- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;
- TS 23.122 [31], clause 3.1A.

10.1.1.3 Test purpose

To verify that the ME only selects a CSG cell if the CSG IDs of the cell is found in the allowed CSG IDs from EF_{ACSGL}.

10.1.1.4 Method of test

10.1.1.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 05

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

10.1.1.4.2 Procedure

- a) The UE is powered on.
- b) After 2 minutes the E-USS stops all RF output for the first cell with TAI 246/081/0001 on the BCCH for a long enough period of time to cause a cell reselection procedure in the UE. The BCCH is changed to contain:
 - csg-Identity: 03The E-USS then resumes RF output on the BCCH.
- c) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- d) During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0001

GUTI: "24608100010266436587"

- e) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRCCConnectionRelease* to the UE.
- f) The UE is soft powered down.

10.1.1.5 Acceptance criteria

- 1) After steps a) the terminal shall not attempt an Attach procedure.
- 2) After step b) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the e-USS.
- 3) During step c) the terminal shall send *AttachRequest* to the E-USS.
- 4) After step d) the terminal shall respond with *AttachComplete* during registration.
- 5) After step e) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24608100010266436587
 Last visited registered TAI: 246/081/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	16	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	16	80	00	01	00				

10.1.2 Automatic CSG selection in E-UTRA with CSG list on USIM, removal of CSG ID from the USIM

10.1.2.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

10.1.2.2 Conformance requirement

When a UE in idle mode detects the presence of a permissible CSG cell (a CSG cell whose CSG identity is in the UE's permitted CSG list), the UE shall select the CSG cell.

The ME shall read the allowed CSG IDs from EF_{ACSGL} in order to perform HNB selection procedures. The lists in EF_{ACSGL} shall take precedence over the list stored in the ME non-volatile memory.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE receives ATTACH REJECT with cause #25 (Not authorized for this CSG) with integrity protection, the UE shall remove the CSG ID of the cell where the UE has sent the ATTACH REQUEST message from the Allowed CSG list.

- TS 22.011 [6], clause 8.2.2.1;
- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;

- TS 23.122 [31], clause 3.1A.
- TS 24.301 [26], clause 5.5.1.2.5

10.1.2.3 Test purpose

To verify that the ME removes the CSG ID from the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the ATTACH REQUEST message which was rejected with cause #25 by the E-USS.

10.1.2.4 Method of test

10.1.2.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 03

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

10.1.2.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachReject* to the UE with cause #25 (Not authorized for this CSG) with integrity protection, followed by *RRConnectionRelease*.
- d) The UE is soft powered down.

10.1.2.5 Acceptance criteria

- 1) After step a) the UE shall send an *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the E-USS.
- 2) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 3) After step c) the USIM shall contain the following values:

EF_{EPSLOCi} (EPS Information)

Logically: GUTI: not checked
 Last visited registered TAI: 246/081/0001
 EPS update status: ROAMING NOT ALLOWED

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
	B12	B13	B14	B15	B16	B17	B18				
	xx	42	16	80	xx	xx	02				

EF_{ACSGL} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
 1st CSG list 1st CSG Type indication 02
 1st CSG list 1st CSG HNB Name indication 02
 1st CSG list 1st CSG CSG ID: 02 (27bit)

Coding:	A0	0D	80	03	42	16	80	81	06	02
	02	00	00	00	5F					

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: the 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

10.1.3 Manual CSG selection in E-UTRA with CSG list on USIM, success**10.1.3.1 Definition and applicability**

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

10.1.3.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACSGL} in order to perform HNB selection procedures. The lists in EF_{ACSGL} shall take precedence over the list stored in the ME non-volatile memory. In manual CSG selection mode, the ME indicates to the user the list of available CSGs in the currently selected PLMN. The list of CSGs presented to the user is not restricted by the allowed CSG list.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the TRACKING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the TRACKING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list.

- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;
- TS 23.122 [31], clause 3.1A.
- TS 24.301 [26], clause 5.5.3.2.4

10.1.3.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the TRACKING AREA UPDATE REQUEST message which was accepted by the E-USS.

10.1.3.4 Method of test

10.1.3.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

10.1.3.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0001

GUTI: "24608100010266345678"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRCCConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- f) After receipt of an *RRCCConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the E-USS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0002

GUTI: "24608100010266436599"

- h) After receipt of the *TrackingAreaUpdatComplete* during registration from the UE, the E-USS sends *RRCCConnectionRelease* to the UE.
- i) The UE is soft powered down.

10.1.3.5 Acceptance criteria

- 1) After step b) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the e-USS.
- 3) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 4) After step c) the terminal shall respond with *AttachComplete* during registration.
- 5) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step e) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the e-USS.
- 7) During step f) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 8) After step g) the terminal shall respond with *TrackingAreaUpdatComplete* during registration.
- 9) After step i) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24608100010266436599
 Last visited registered TAI: 246/081/0002
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	16	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	99	42	16	80	00	02	00				

EF_{ACSG} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)

1st CSG list 1st CSG Type indication 02
 1st CSG list 1st CSG HNB Name indication 02
 1st CSG list 1st CSG CSG ID: 02 (27bit)
 1st CSG list 2nd CSG Type indication 03
 1st CSG list 2nd CSG HNB Name indication 03
 1st CSG list 2nd CSG CSG ID: 03 (27bit)
 1st CSG list 3rd CSG Type indication 'xx' (not checked)
 1st CSG list 3rd CSG HNB Name indication 'xx' (not checked)
 1st CSG list 3rd CSG CSG ID: 04 (27bit)

Coding:	A0	1D	80	03	42	16	80	81	06	02
	02	00	00	00	5F	81	06	03	03	00
	00	00	7F	81	06	xx	xx	00	00	00
	9F									

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: The 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

The CSG entries within each of the CSG lists are not sorted and may occur in arbitrary order.

10.1.4 Manual CSG selection in E-UTRA with CSG list on USIM, rejected

10.1.4.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

10.1.4.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACSG}L in order to perform HNB selection procedures. The lists in EF_{ACSG}L shall take precedence over the list stored in the ME non-volatile memory.

In manual CSG selection mode, the ME indicates to the user the list of available CSGs in the currently selected PLMN. The list of CSGs presented to the user is not restricted by the allowed CSG list.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the TRACKING AREA UPDATE REJECT message with cause #25 (Not authorized for this CSG) with integrity protection, shall remove the CSG ID of the cell where the UE has sent the TRACKING AREA UPDATE REQUEST message if the CSG ID is contained in the Allowed CSG list.

- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;
- TS 23.122 [31], clause 3.1A.

- TS 24.301 [26], clause 5.5.3.2.5

10.1.4.3 Test purpose

To verify that the ME does not add the CSG ID to the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the TRACKING AREA UPDATE REQUEST message which was rejected by the E-USS.

10.1.4.4 Method of test

10.1.4.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

10.1.4.4.2 Procedure

- The UE is powered on.
- After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0001

GUTI: "24608100010266345678"
- After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*, to the UE.
- The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.

- g) During registration and after receipt of an *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateReject* to the UE with cause #25 (Not authorized for this CSG) with integrity protection, followed by *RRCConnectionRelease* to the UE.
- h) The UE is soft powered down.

10.1.4.5 Acceptance criteria

- 1) After step a) the UE shall send an *RRCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the E-USS.
- 3) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 4) After step c) the terminal shall respond with *AttachComplete* during registration.
- 5.) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step e) the UE shall send a *RRCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the E-USS.
- 7) During step f) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 8) After step h) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: not checked
 Last visited registered TAI: 246/081/0001
 EPS update status: ROAMING NOT ALLOWED

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx	xx
	B12	B13	B14	B15	B16	B17	B18				
	xx	42	16	80	00	01	02				

EF_{ACSG} (Allowed CSG Lists)

Content not changed, shall be the same as defined in clause 4.4.5.

10.1.5 CSG selection in E-UTRA with no CSG list on USIM, no IMSI change

10.1.5.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

10.1.5.2 Conformance requirement

In manual CSG selection mode, the ME indicates to the user the list of available CSGs in the currently selected PLMN. The list of CSGs presented to the user is not restricted by the allowed CSG list. If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the TRACKING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the TRACKING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list.

If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM. The allowed CSG list is stored in a non-volatile memory in the ME if the UE supports CSG selection. These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;
- TS 23.122 [31], clause 3.1A.
- TS 24.301 [26], clause 5.5.3.2.4 and Annex C.

10.1.5.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in a non-volatile memory in the ME together with the IMSI from the USIM in case this CSG ID belongs to the cell where the ME has sent the TRACKING AREA UPDATE REQUEST message which was accepted by the E-USS as the corresponding file is not present on the simulated USIM.

To verify that the ME still has this CSG ID stored in the Allowed CSG list available together with the IMSI after powered down and up in case the IMSI of the USIM has not changed.

To verify that the ME removes the CSG ID from the Allowed CSG list inside the terminal in case this CSG ID belongs to the cell where the ME has sent the ATTACH REQUEST message which was rejected with cause #25 by the E-USS.

10.1.5.4 Method of test

10.1.5.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default UICC (without the service "Allowed CSG Lists and corresponding indications") is installed into the Terminal.

The ME shall not have csg-ID = 04 nor csg-ID=06 in the allowed CSG list stored in a non-volatile memory in the ME and the ME is set to automatic PLMN selection mode.

10.1.5.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with the following parameters to the UE:
 - TAI (MCC/MNC/TAC):246/081/ 0001
 - GUTI: "24608100010266345678"
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- f) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with the following parameters to the UE:
 - TAI (MCC/MNC/TAC):246/081/TACs: 0002
 - GUTI: "24608100010266345699"
- h) After receipt of the *TrackingAreaUpdateComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- i) The UE is switched off and performs the *Detach* procedure.
- j) The default UICC remains in use.
- k) The E-USS shall change the BCCH for the cell transmitting TAI 246/081/0001 to the following network parameters:
 - csg-Indication: TRUE
 - csg-Identity: 06
- l) The UE is powered on.
- m) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- n) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachReject* to the UE with cause #25 (Not authorized for this CSG) with integrity protection, followed by *RRConnectionRelease*.
- o) The UE is soft powered down.

- p) The default UICC remains in use.
- q) The UE is powered on.
- r) After 2 minutes the UE is soft powered down.

10.1.5.5 Acceptance criteria

- 1) After step a) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the E-USS.
- 3) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 4) After step c) the terminal shall respond with *AttachComplete* during registration.
- 5) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step e) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the E-USS.
- 7) During step f) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 8) After step g) the terminal shall respond with *TrackingAreaUpdateComplete* during registration.
- 9) After step l) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the E-USS.
- 10) During step n) the terminal shall send *AttachRequest* to the E-USS.
- 10a) After step n) the terminal shall not try to register to the E-USS using the same CSG ID which was rejected in step n).
- 11) After step q) the terminal shall not try to register to the E-USS using the same CSG ID which was rejected in step n).

10.1.6 CSG selection in E-UTRA with no CSG list on USIM, with IMSI change

10.1.6.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

10.1.6.2 Conformance requirement

In manual CSG selection mode, the ME indicates to the user the list of available CSGs in the currently selected PLMN. The list of CSGs presented to the user is not restricted by the allowed CSG list.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the TRACKING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the TRACKING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list.

If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM. The allowed CSG list is stored in a non-volatile memory in the ME if the UE supports CSG selection. These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;
- TS 23.122 [31], clause 3.1A.
- TS 24.301 [26], clause 5.5.3.2.4 and Annex C.

10.1.6.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in a non-volatile memory in the ME together with the IMSI from the USIM in case this CSG ID belongs to the cell where the ME has sent the TRACKING AREA UPDATE REQUEST message which was accepted by the E-USS as the corresponding file is not present on the simulated USIM.

To verify that the ME removes this CSG ID stored in the Allowed CSG list available together with the IMSI after powered down and up in case the IMSI of the USIM has changed.

10.1.6.4 Method of test

10.1.6.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default UICC (without the service "Allowed CSG Lists and corresponding indications") is installed into the Terminal.

The ME shall not have csg-ID = 04 nor csg-ID=06 in the allowed CSG list stored in a non-volatile memory in the ME and the ME is set to automatic PLMN selection mode.

10.1.6.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRCCConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the E-USS.

- c) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the following parameters the UE:

TAI (MCC/MNC/TAC):246/081/ 0001

GUTI: "24608100010266345678"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- f) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS may initiate authentication, may start integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with the following parameters to the UE:

TAI (MCC/MNC/TAC):246/081/ 0002

GUTI: "24608100010266345699"

- h) After receipt of the *TrackingAreaUpdateComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- i) The UE is switched off and performs the *Detach* procedure.
- j) A new UICC with the following configuration is activated:
The default UICC with the following exception: The IMSI is set to "246081222233333".
- k) The E-USS shall change the BCCH for the cell transmitting TAI 246/081/0001 to the following network parameters:
- | | |
|-------------------|------|
| - csg-Indication: | TRUE |
| - csg-Identity: | 06 |
- l) The UE is powered on.
- m) After 2 minutes the UE is soft powered down.

10.1.6.5 Acceptance criteria

- 1) After step b) the UE shall send an *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the e-USS.
- 3) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 4) After step c) the terminal shall respond with *AttachComplete* during registration.
- 5) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step e) the UE shall send an *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the e-USS.
- 7) During step f) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 8) After step g) the terminal shall respond with *TrackingAreaUpdateComplete* during registration.
- 9) After step l) the terminal shall not try to register to the E-USS.

10.1.7 Manual CSG selection without display restrictions in E-UTRA with ACSG list and OCSG list on USIM

10.1.7.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects a CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

Editor's note: it is still being investigated whether the testing of Automatic CSG selection should be performed using a separate test case or an enhanced version of the Manual CSG selection test case.

10.1.7.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACSGL} and EF_{OCSGL} in order to perform HNB selection procedures. The lists in EF_{ACSGL} and EF_{OCSGL} shall take precedence over the list stored in the ME non-volatile memory.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the TRACKING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the TRACKING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list EF_{ACSGL}.

By default, the UE shall display all available CSGs for any PLMN, unless the UE has been configured by the HPLMN, for a specific PLMN, to display only CSGs in the Operator CSG List that are available.

- TS 31.102 [4], clauses 4.2.18, 4.4.6.2, 4.4.6.5 and 5.8.1;
- TS 24.301 [26], clause 5.5.3.2.4
- TS 22.220 [34], clause 5.3.2 and 5.5.4

10.1.7.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the TRACKING AREA UPDATE REQUEST message which was accepted by the E-USS. During the manual CSG selection all available CSG ID shall be displayed without restrictions.

10.1.7.4 Method of test

10.1.7.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- TAI (MCC/MNC/TAC): 246/081/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default ACSGL/OCSGL E-UTRAN/EPC UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection and manual CSG selection mode.

10.1.7.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0001

GUTI: "24608100010266345678"
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- f) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- g) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0002

GUTI: "24608100010266436599"
- h) After receipt of the *TrackingAreaUpdatComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- i) The UE is soft powered down.

10.1.7.5 Acceptance criteria

- 1) After step b) the UE shall send an *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the e-USS.
- 3) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 4) After step c) the terminal shall respond with *AttachComplete* during registration.
- 5) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.

- 6) After step e) the UE shall send an *RRConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the E-USS.
- 7) During step f) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 8) After step g) the terminal shall respond with *TrackingAreaUpdateComplete* during registration.
- 9) After step i) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24608100010266436599
 Last visited registered TAI: 246/081/0002
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	16	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	99	42	16	80	00	02	00				

EF_{ACSGL} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
 1st CSG list 1st CSG Type indication 02
 1st CSG list 1st CSG HNB Name indication 02
 1st CSG list 1st CSG CSG ID: 02 (27bit)
 1st CSG list 2nd CSG Type indication 03
 1st CSG list 2nd CSG HNB Name indication 03
 1st CSG list 2nd CSG CSG ID: 03 (27bit)
 1st CSG list 3rd CSG Type indication 'xx' (not checked)
 1st CSG list 3rd CSG HNB Name indication 'xx' (not checked)
 1st CSG list 3rd CSG CSG ID: 04 (27bit)

Coding:	A0	1D	80	03	42	16	80	81	06	02
	02	00	00	00	5F	81	06	03	03	00
	00	00	7F	81	06	xx	xx	00	00	00
	9F									

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: The 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

EF_{OC} (Operator CSG Lists)

Unchanged values as defined in 4.6.3

10.1.8 Manual CSG selection with display restrictions in E-UTRA with ACSG list and OCSG list on USIM

10.1.8.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects a CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

10.1.8.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACSGL} and EF_{OCSGL} in order to perform HNB selection procedures. The lists in EF_{ACSGL} and EF_{OCSGL} shall take precedence over the list stored in the ME non-volatile memory.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the TRACKING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the TRACKING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list EF_{ACSGL}.

By default, the UE shall display all available CSGs for any PLMN, unless the UE has been configured by the HPLMN, for a specific PLMN, to display only CSGs in the Operator CSG List that are available.

- TS 31.102 [4], clauses 4.2.18, 4.4.6.2, 4.4.6.5 and 5.8.1;
- TS 24.301 [26], clause 5.5.3.2.4
- TS 22.220 [34], clause 5.3.2 and 5.5.4

10.1.8.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the TRACKING AREA UPDATE REQUEST message which was accepted by the E-USS. During the manual CSG selection all available CSG ID shall be displayed with restrictions.

10.1.8.4 Method of test

10.1.8.4.1 Initial conditions

For this test an E-USS is required.

The E-USS transmits on two cells, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- TAI (MCC/MNC/TAC): 246/080/0002.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default ACSGL/OCSGL E-UTRAN/EPC UICC is used except the following change:

EF_{AD} (Administrative Data)

- Logically: Normal operation + specific facilities
 Ciphering indicator feature disabled
 MNC: 3 digit
 For every PLMN not included in EF_OCSGL or any PLMN for which a CSG display indicator tag is not present, only the available CSGs found in the Operator CSG list shall be displayed (B3)

Coding:	B1	B2	B3	B4
Hex	01	00	02	03

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection and manual CSG selection mode.

10.1.8.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001, the E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0001

GUTI: "24608100010266345678"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall not indicate the availability of a cell with csg-Identity 04 for PLMN 246/080, this shall be verified for 2 minutes.
- f) The E-USS stops all RF output for the first cell with TAI 246/081/0001 on the BCCH. The BCCH is changed to contain:

- TAI (MCC/MNC/TAC): 246/081/0002

- csg-Indication: TRUE

- csg-Identity:04

The E-USS then resumes RF output on the BCCH.

- g) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.

- h) After receipt of an *RRCCConnectionRequest* from the UE on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002, the E-USS sends *RRCCConnectionSetup* to the UE, followed by *RRCCConnectionSetupComplete* sent by the UE to the E-USS.
- i) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* with to the UE:

TAI (MCC/MNC/TAC):246/081/ 0002

GUTI: "24608100010266436599"

- j) After receipt of the *TrackingAreaUpdatComplete* during registration from the UE, the E-USS sends *RRCCConnectionRelease* to the UE.
- k) The UE is soft powered down.

10.1.8.5 Acceptance criteria

- 1) After step b) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0001 to the E-USS.
- 2) During step b) the terminal shall send *AttachRequest* to the E-USS.
- 3) After step c) the terminal shall respond with *AttachComplete* during registration.
- 4) During step e) the UE shall not provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/080 to the user.
- 5) During step g) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step h) the UE shall send an *RRCCConnectionRequest* on the E-UTRAN-cell related to the BCCH transmitting TAI 246/081/0002 to the E-USS.
- 7) During step i) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 8) After step j) the terminal shall respond with *TrackingAreaUpdatComplete* during registration.
- 9) After step k) the USIM shall contain the following values:

EF_{EPSLOC} (EPS Information)

Logically: GUTI: 24608100010266436599
 Last visited registered TAI: 246/081/0002
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	16	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	99	42	16	80	00	02	00				

EF_{ACSG} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
 1st CSG list 1st CSG Type indication 02
 1st CSG list 1st CSG HNB Name indication 02
 1st CSG list 1st CSG CSG ID: 02 (27bit)
 1st CSG list 2nd CSG Type indication03

1st CSG list 2nd CSG HNB Name indication 03
 1st CSG list 2nd CSG CSG ID:03 (27bit)
 1st CSG list 3rd CSG Type indication 'xx' (not checked)
 1st CSG list 3rd CSG HNB Name indication 'xx' (not checked)
 1st CSG list 3rd CSG CSG ID: 04 (27bit)

Coding:	A0	1D	80	03	42	16	80	81	06	02
	02	00	00	00	5F	81	06	03	03	00
	00	00	7F	81	06	xx	xx	00	00	00
	9F									

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: The 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

EF_{OCsGL} (Operator CSG Lists)

Unchanged values as defined in 4.6.3

10.2 CSG list handling for UTRA

10.2.1 Manual CSG selection without display restrictions in UTRA with ACSG list and OCSG list on USIM

10.2.1.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects a CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

Editor's note: it is still being investigated whether the testing of Automatic CSG selection should be performed using a separate test case or an enhanced version of the Manual CSG selection test case.

10.2.1.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACsGL} and EF_{OCsGL} in order to perform HNB selection procedures. The lists in EF_{ACsGL} and EF_{OCsGL} shall take precedence over the list stored in the ME non-volatile memory.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the ROUTING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the ROUTING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list EF_{ACSGL} .

By default, the UE shall display all available CSGs for any PLMN, unless the UE has been configured by the HPLMN, for a specific PLMN, to display only CSGs in the Operator CSG List that are available.

- TS 31.102 [4], clauses 4.2.18, 4.4.6.2, 4.4.6.5 and 5.8.1;
- TS 23.122 [31], clause 3.1A.
- TS 22.220 [34], clause 5.3.2 and 5.5.4

10.2.1.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the ROUTING AREA UPDATE REQUEST message which was accepted by the USS. During the manual CSG selection all available CSG ID shall be displayed without restrictions.

10.2.1.4 Method of test

10.2.1.4.1 Initial conditions

For this test an USS is required.

The USS transmits on two cells, with the following network parameters:

- RAI (MCC/MNC/LAC/RAC): 246/081/0001/01.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present
- RAI (MCC/MNC/LAC/RAC): 246/081/0002/02.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default ACSGL/OCSGL E-UTRAN/EPC UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection and manual CSG selection mode.

10.2.1.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0001/01, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* to the UE:

RAI (MCC/MNC/LAC/RAC): 246/081/0001/01

P-TMSI "87512890"

- d) After receipt of the *AttachComplete* during registration from the UE, the USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- f) After receipt of an *RRConnectionRequest* from the UE on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0002/02, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- g) During registration and after receipt of a *RoutingAreaUpdateRequest* from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends *RoutingAreaUpdateAccept* to the UE:
RAI (MCC/MNC/LAC/RAC): 246/081/0002/02
P-TMSI "34567890"
- h) After receipt of the *RoutingAreaUpdateComplete* during registration from the UE, the USS sends *RRConnectionRelease* to the UE.
- i) The UE is soft powered down.

10.2.1.5 Acceptance criteria

- 1) After step b) the UE shall send an *RRConnectionRequest* on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0001/01 to the USS.
- 3) During step c) the UE shall send *AttachRequest* to the USS.
- 4) After step c) the UE shall respond with *AttachComplete* during registration.
- 5) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step e) the UE shall send an *RRConnectionRequest* on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0002/02 to the USS.
- 7) During step g) the UE shall send *RoutingAreaUpdateRequest* to the USS.
- 8) After step g) the UE shall respond with *RoutingAreaUpdateComplete* during registration.
- 9) After step i) the USIM shall contain the following values:

EF_{PSLOC} (Location Information)

Logically:

RAI-MCC: 246
RAI-MNC: 081
RAI-LAC: 0002
RAI-RAC: 02
P-TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	42	16	80	00

Coding:	B12	B13	B14								
Hex	02	02	00								

EF_{ACSG} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
 1st CSG list 1st CSG Type indication 02
 1st CSG list 1st CSG HNB Name indication 02
 1st CSG list 1st CSG CSG ID: 02 (27bit)
 1st CSG list 2nd CSG Type indication 03
 1st CSG list 2nd CSG HNB Name indication 03
 1st CSG list 2nd CSG CSG ID: 03 (27bit)
 1st CSG list 3rd CSG Type indication 'xx' (not checked)
 1st CSG list 3rd CSG HNB Name indication 'xx' (not checked)
 1st CSG list 3rd CSG CSG ID: 04 (27bit)

Coding:	A0	1D	80	03	42	16	80	81	06	02
	02	00	00	00	5F	81	06	03	03	00
	00	00	7F	81	06	xx	xx	00	00	00
	9F									

2nd CSG list

PLMN: 244 081 (MCC MNC)
 2nd CSG list 1st CSG Type indication 08
 2nd CSG list 1st CSG HNB Name indication 08
 2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: The 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

EF_{OCSGL} (Operator CSG Lists)

Unchanged values as defined in 4.6.3

10.2.2 Manual CSG selection with display restrictions in UTRA with ACSG list and OCSG list on USIM

10.2.2.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects a CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

10.2.2.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACSGL} and EF_{OCSGL} in order to perform HNB selection procedures. The lists in EF_{ACSGL} and EF_{OCSGL} shall take precedence over the list stored in the ME non-volatile memory.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the ROUTING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the ROUTING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list EF_{ACSGL}.

By default, the UE shall display all available CSGs for any PLMN, unless the UE has been configured by the HPLMN, for a specific PLMN, to display only CSGs in the Operator CSG List that are available.

- TS 31.102 [4], clauses 4.2.18, 4.4.6.2, 4.4.6.5 and 5.8.1;
- TS 23.122 [31], clause 3.1A.
- TS 22.220 [34], clause 5.3.2 and 5.5.4

10.2.2.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in EF_{ACSGL} in case this CSG ID belongs to the cell where the ME has sent the ROUTING AREA UPDATE REQUEST message which was accepted by the USS. During the manual CSG selection all available CSG ID shall be displayed with restrictions.

10.2.2.4 Method of test

10.2.2.4.1 Initial conditions

For this test an USS is required.

The USS transmits on two cells, with the following network parameters:

- RAI (MCC/MNC/LAC/RAC): 246/081/0001/01.
- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- RAI (MCC/MNC/LAC/RAC): 246/080/0002/02.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default ACSGL/OCSGL E-UTRAN/EPC UICC is used except the following change:

EF_{AD} (Administrative Data)

- Logically: Normal operation + specific facilities
- Ciphering indicator feature disabled
- MNC: 3 digit
- For every PLMN not included in EF_{OCSGL} or any PLMN for which a CSG display indicator tag is not present, only the available CSGs found in the Operator CSG list shall be displayed (B3)

Coding:	B1	B2	B3	B4
Hex	01	00	02	03

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection and manual CSG selection mode.

10.2.2.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0001/01, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

RAI (MCC/MNC/LAC/RAC): 246/081/0001/01

P-TMSI "87512890"
- d) After receipt of the *AttachComplete* during registration from the UE, the USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall not indicate the availability of a cell with csg-Identity 04 for PLMN 246/080, this shall be verified for 2 minutes.
- f) The USS stops all RF output for the first cell with RAI 246/081/0001/01 on the BCCH. The BCCH is changed to contain:

- RAI (MCC/MNC/LAC/RAC): 246/081/0002/02.

- csg-Indication: TRUE

- csg-Identity:04

The USS then resumes RF output on the BCCH.
- g) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- h) After receipt of an *RRConnectionRequest* from the UE on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0002/02, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- i) During registration and after receipt of a *RoutingAreaUpdateRequest* from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends *RoutingAreaUpdateAccept* with to the UE:

RAI (MCC/MNC/TAC): 246/081/0002/02

P-TMSI "34567890"
- j) After receipt of the *RoutingAreaUpdatComplete* during registration from the UE, the USS sends *RRConnectionRelease* to the UE.
- k) The UE is soft powered down.

10.2.2.5 Acceptance criteria

- 1.) After step b) the UE shall send an *RRConnectionRequest* on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0001/01 to the USS.
- 3) During step c) the terminal shall send *AttachRequest* to the USS.
- 4) After step c) the terminal shall respond with *AttachComplete* during registration.

- 5) During step e) the UE shall not provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/080 to the user.
- 6) During step g) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6a) After step g) the UE shall send an *RRConnectionRequest* on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0002/02 to the USS.
- 7) During step i) the terminal shall send *RoutingAreaUpdateRequest* to the USS.
- 8) After step i) the terminal shall respond with *RoutingAreaUpdatComplete* during registration.
- 9) After step k) the USIM shall contain the following values:

EF_{PSLOC} (Location Information)

Logically:

RAI-MCC: 246
RAI-MNC: 081
RAI-LAC: 0002
RAI-RAC: 02
P-TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	42	16	80	00

Coding:	B12	B13	B14								
Hex	02	02	00								

EF_{ACSG} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
1st CSG list 1st CSG Type indication 02
1st CSG list 1st CSG HNB Name indication 02
1st CSG list 1st CSG CSG ID: 02 (27bit)
1st CSG list 2nd CSG Type indication 03
1st CSG list 2nd CSG HNB Name indication 03
1st CSG list 2nd CSG CSG ID: 03 (27bit)
1st CSG list 3rd CSG Type indication 'xx' (not checked)
1st CSG list 3rd CSG HNB Name indication 'xx' (not checked)
1st CSG list 3rd CSG CSG ID: 04 (27bit)

Coding:	A0	1D	80	03	42	16	80	81	06	02
	02	00	00	00	5F	81	06	03	03	00
	00	00	7F	81	06	xx	xx	00	00	00
	9F									

2nd CSG list

PLMN: 244 081 (MCC MNC)
2nd CSG list 1st CSG Type indication 08
2nd CSG list 1st CSG HNB Name indication 08
2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: The 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

EF_{OCsGL} (Operator CSG Lists)

Unchanged values as defined in 4.6.3

10.2.3 Manual CSG selection in UTRA with CSG list on USIM, success

10.2.3.1 Definition and applicability

A Closed Subscriber Group identifies subscribers of an operator who are permitted to access one or more cells of the PLMN but which have restricted access (CSG cells). A CSG cell is part of the PLMN, broadcasting a CSG indication that is set to TRUE and a specific CSG identity. A CSG cell is accessible by the members of the closed subscriber group for that CSG identity. For a CSG cell, the UE shall check the broadcast CSG ID against the Allowed CSG list provided by NAS to check whether a CSG cell is suitable for the UE.

A UE supporting CSG selection selects CSG cell either automatically based on the list of allowed CSG identities or manually based on user selection of CSG on indication of list of available CSGs.

Editor's note: it is still being investigated whether the testing of both the unsuccessful Manual CSG selection and the Automatic CSG selection should be performed using a separate test case or an enhanced version of the Manual CSG selection test case.

10.2.3.2 Conformance requirement

The ME shall read the allowed CSG IDs from EF_{ACsGL} in order to perform HNB selection procedures. The lists in EF_{ACsGL} shall take precedence over the list stored in the ME non-volatile memory.

In manual CSG selection mode, the ME indicates to the user the list of available CSGs in the currently selected PLMN. The list of CSGs presented to the user is not restricted by the allowed CSG list.

If the MS supports CSG, it is provisioned with a list of allowed CSG identities and associated PLMN identities from the USIM if the list is available in the USIM.

If the UE supporting CSG selection has attempted manual CSG selection, the UE, when receiving the ROUTING AREA UPDATE ACCEPT message, shall check if the CSG ID of the cell where the UE has sent the ROUTING AREA UPDATE REQUEST message is contained in the Allowed CSG list. If not, the UE shall add that CSG ID to the Allowed CSG list.

- TS 31.102 [4], clauses 4.4.6.2 and 5.8.1;
- TS 23.122 [31], clause 3.1A.
- TS 24.008 [16], clause 4.7.5.1.3

10.2.3.3 Test purpose

To verify that the ME adds the CSG ID to the Allowed CSG list in EF_{ACsGL} in case this CSG ID belongs to the cell where the ME has sent the ROUTING AREA UPDATE REQUEST message which was accepted by the USS.

10.2.3.4 Method of test

10.2.3.4.1 Initial conditions

For this test an USS is required.

The USS transmits on two cells, with the following network parameters:

- RAI (MCC/MNC/LAC/RAC): 246/081/0001/01.

- Access control: unrestricted.
- csg-Indication: FALSE
- csg-Identity: not present

- RAI (MCC/MNC/LAC/RAC): 246/081/0002/02.
- Access control: unrestricted.
- csg-Indication: TRUE
- csg-Identity: 04

The default E-UTRAN UICC is used.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

10.2.3.4.2 Procedure

- a) The UE is powered on.
- b) After receipt of an *RRConnectionRequest* from the UE on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0001/01, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- c) During registration and after receipt of an *AttachRequest* from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* with to the UE:

RAI (MCC/MNC/LAC/RAC): 246/081/0001/01

P-TMSI "87512890"
- d) After receipt of the *AttachComplete* during registration from the UE, the USS sends *RRConnectionRelease* to the UE.
- e) The MMI of the UE is used to perform manual CSG selection. The UE shall indicate the availability of a cell with csg-Identity 04 for PLMN 246/081. The user shall select this cell by using the MMI.
- f) After receipt of an *RRConnectionRequest* from the UE on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0002/02, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- g) During registration and after receipt of a *RoutingAreaUpdateRequest* from the UE, the USS initiates authentication, starts integrity by using the security procedure and sends *RoutingAreaUpdateAccept* with to the UE:

RAI (MCC/MNC/LAC/RAC): 246/081/0002/02

P-TMSI "34567890"
- h) After receipt of the *RoutingAreaUpdatComplete* during registration from the UE, the USS sends *RRConnectionRelease* to the UE.
- i) The UE is soft powered down.

10.2.3.5 Acceptance criteria

- 1) After step a) the UE shall send an *RRConnectionRequest* on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0001/01 to the USS.
- 3) During step c) the terminal shall send *AttachRequest* to the USS.

- 4) After step c) the terminal shall respond with *AttachComplete* during registration.
- 5) During step e) the UE shall provide during the manual CSG selection the information for a cell with csg-Identity 04 for PLMN 246/081 to the user.
- 6) After step e) the UE shall send an *RRCCConnectionRequest* on the UTRAN-cell related to the BCCH transmitting RAI 246/081/0002/02 to the USS.
- 7) During step g) the terminal shall send *RoutingAreaUpdateRequest* to the USS.
- 8) After step g) the terminal shall respond with *RoutingAreaUpdatComplete* during registration.
- 9) After step i) the USIM shall contain the following values:

EF_{PSLOCI} (Location Information)

Logically:

RAI-MCC: 246
RAI-MNC: 081
RAI-LAC: 0002
RAI-RAC: 02
P-TMSI: "34567890"

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	34	56	78	90	xx	xx	xx	42	16	80	00

Coding:	B12	B13	B14
Hex	02	02	00

EF_{ACSGL} (Allowed CSG Lists)

Logically:

1st CSG list

PLMN: 246 081 (MCC MNC)
1st CSG list 1st CSG Type indication 02
1st CSG list 1st CSG HNB Name indication 02
1st CSG list 1st CSG CSG ID: 02 (27bit)
1st CSG list 2nd CSG Type indication 03
1st CSG list 2nd CSG HNB Name indication 03
1st CSG list 2nd CSG CSG ID: 03 (27bit)
1st CSG list 3rd CSG Type indication 'xx'
1st CSG list 3rd CSG HNB Name indication 'xx'
1st CSG list 3rd CSG CSG ID: 04 (27bit)

Coding:	A0	1D	80	03	42	16	80	81	06	02
	02	00	00	00	5F	81	06	03	03	00
	00	00	7F	81	06	xx	xx	00	00	00
	9F									

2nd CSG list

PLMN: 244 081 (MCC MNC)
2nd CSG list 1st CSG Type indication 08
2nd CSG list 1st CSG HNB Name indication 08
2nd CSG list 1st CSG CSG ID: 08 (27bit)

Coding:	A0	0D	80	03	42	14	80	81	06	08
	08	00	00	01	1F					

Note: The 1st and 2nd CSG list may be stored together or separately in any record in arbitrary order.

11 NAS security context parameter handling

11.1 NAS security context parameter handling when service "EMM Information" is available

11.1.1 Definition and applicability

The security parameters for authentication, integrity protection and ciphering are tied together in an EPS security context and identified by a key set identifier for E-UTRAN (eKSI). The relationship between the security parameters is defined in 3GPP TS 33.401 [27].

The EPS security context parameters shall be stored on the USIM if the corresponding file is present. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

The EF_{EPSNSC} contains the EPS NAS Security context as defined in TS 33.401 [27]. This file shall contain only one record and shall be updated only when the requirements defined in TS 33.401 [27] are met.

11.1.2 Conformance requirement

EPS AKA is the authentication and key agreement procedure that shall be used over E-UTRAN.

Before security can be activated, the MME and the UE need to establish an EPS security context. Usually, the EPS security context is created as the result of an authentication procedure between MME and UE. The EPS security context parameters shall be stored on the USIM if the corresponding file is present, and shall be updated only when the requirements defined in TS 33.401 [27] are met. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

- TS 24.301 [26], clause 4.4.2.1 and Annex C;
- TS 31.102 [4], clause 4.2.92;
- TS 33.401 [27], clause 6.1.1, 7.2.5.1 and 7.2.5.2.1.

11.1.3 Test purpose

To verify that the ME generates the EPS security context identified by a key set identifier for E-UTRAN (eKSI) and stores all inside EF_{EPSNSC} if this EF is available and when the requirements defined in TS 33.401 [27], clauses 7.2.5.1 and 7.2.5.2.1 are met.

11.1.4 Method of test

11.1.4.1 Initial conditions

For this test an E-USS or a NB-SS is required.

The E-USS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.

- Access control: unrestricted.

The default E-UTRAN UICC is used.

11.1.4.2 Procedure

- The UE is switched on.
- After receipt of an *RRCConnectionRequest/RRCConnectionRequest-NB* from the UE the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- During registration and after receipt of an *AttachRequest* (included in the *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB*) from the UE, the E-USS/NB-SS initiates the EPS authentication and AKA procedure. The E-USS/NB-SS uses
 eKSI: '00'
- Afterwards the E-USS/NB-SS transmits a (NAS) *SecurityModeCommand* message to activate NAS security, and after receiving (NAS) *SecurityModeComplete* from the UE, the E-USS/NB-SS sends *AttachAccept* to the UE with:
 TAI (MCC/MNC/TAC):246/081/ 0001
 GUTI: "24608100010266345678"
- After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE.
- The UE or the UE's radio interface is switched off to perform the DETACH procedure.

11.1.5 Acceptance criteria

- After step a) the UE shall read EF_{UST} and EF_{EPSNSC}.
- During step b) the UE shall indicate in the *AttachRequest* that no key is available.
- During step c) the UE shall send the *AuthenticationResponse* message.
- During step d) the UE shall send the (NAS) *SecurityModeComplete* message.
- EF_{EPSNSC} shall not be updated during steps c) to e), unless for invalidating the content of EF_{EPSNSC}.

Note: Invalidation of EF_{EPSNSC} is described in TS 31.102 [4], clause 4.2.92.

- After step f) the UE shall send DETACH REQUEST to the E-USS/NB-SS.
- After step f) EF_{EPSNSC} shall contain:

EF_{EPSNSC} (EPS NAS Security Context)

Logically: Key Set Identifier KSI_{ASME}: '00'
 ASME Key (KSI_{ASME}): 32 byte key, value not checked
 Uplink NAS count: any value
 Downlink NAS count: any value
 Identifiers of selected NAS any value
 integrity and encryption
 algorithm

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	...	...	...	Bxx
Hex	A0	xx	80	01	00	81	xx	xx	...	...	...	xx

11.2 NAS security context parameter handling when service "EMM Information" is not available, no IMSI change

11.2.1 Definition and applicability

The security parameters for authentication, integrity protection and ciphering are tied together in an EPS security context and identified by a key set identifier for E-UTRAN (eKSI). The relationship between the security parameters is defined in 3GPP TS 33.401 [27].

The EPS security context parameters shall be stored on the USIM if the corresponding file is present. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

The EF_{EPSNSC} contains the EPS NAS Security context as defined in TS 33.401 [27]. This file shall contain only one record.

11.2.2 Conformance requirement

EPS AKA is the authentication and key agreement procedure that shall be used over E-UTRAN.

Before security can be activated, the MME and the UE need to establish an EPS security context. Usually, the EPS security context is created as the result of an authentication procedure between MME and UE. The EPS security context parameters shall be stored on the USIM if the corresponding file is present. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

- TS 24.301 [26], clause 4.4.2.1 and Annex C;
- TS 31.102 [4], clause 4.2.92;
- TS 33.401 [27], clause 6.1.1.

11.2.3 Test purpose

To verify that the ME generates the EPS security context identified by a key set identifier for E-UTRAN (eKSI) and stores all inside a non-volatile memory in the ME as EMM information is not available on the USIM. During the test the IMSI on the USIM remains unchanged.

11.2.4 Method of test

11.2.4.1 Initial conditions

For this test an E-USS or a NB-SS is required.

The E-USS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The default UICC (without the service "EMM Information") is installed into the Terminal.

11.2.4.2 Procedure

- a) The UE is switched on.
- b) After receipt of an *RRConnectionRequest/RRConnectionRequest-NB* from the UE the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- c) During registration and after receipt of an *AttachRequest* (included in the *RRConnectionSetupComplete/RRConnectionSetupComplete-NB*) from the UE, the E-USS/NB-SS initiates the EPS authentication and AKA procedure. The E-USS/NB-SS uses

eKSI: 00

- d) Afterwards the E-USS/NB-SS transmits a (NAS) *SecurityModeCommand* message to activate NAS security, and after receiving (NAS) *SecurityModeComplete* from the UE, the E-USS/NB-SS sends *AttachAccept* to the UE with:

TAI (MCC/MNC/TAC):246/081/0001

GUTI: "24608100010266345678"

- e) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRConnectionRelease/RRConnectionRelease-NB* to the UE.
- f) The UE is switched off and performs the *Detach* procedure.
- g) The default UICC remains in use.
- h) The Terminal is switched on.
- i) After receipt of an *RRConnectionRequest/RRConnectionRequest-NB* from the UE the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- j) During registration and after receipt of an *AttachRequest* (included in the *RRConnectionSetupComplete/RRConnectionSetupComplete-NB*) from the UE, E-USS/NB-SS transmits a (NAS) *SecurityModeCommand* message to activate NAS security using the last known K_{ASME} , and after receiving (NAS) *SecurityModeComplete* from the UE, the E-USS/NB-SS sends *AttachAccept* to the UE with:

TAI (MCC/MNC/TAC):246/081/0001

GUTI: "24608100010266345619"

- k) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRConnectionRelease/RRConnectionRelease-NB* to the UE.

11.2.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} .
- 2) During step c) the UE shall send the *AuthenticationResponse* message.
- 3) During step d) the UE shall send the (NAS) *SecurityModeComplete* message.
- 4) During step j) the UE shall indicate in the *AttachRequest* eKSI as 00.
- 5) During step j) the UE shall send the (NAS) *SecurityModeComplete* message.
- 6) During step k) the UE shall send the *AttachComplete* message.

11.3 NAS security context parameter handling when service "EMM Information" is not available, IMSI changed

11.3.1 Definition and applicability

The security parameters for authentication, integrity protection and ciphering are tied together in an EPS security context and identified by a key set identifier for E-UTRAN (eKSI). The relationship between the security parameters is defined in 3GPP TS 33.401 [27].

The EPS security context parameters shall be stored on the USIM if the corresponding file is present. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

The EF_{EPSNSC} contains the EPS NAS Security context as defined in TS 33.401 [27]. This file shall contain only one record.

11.3.2 Conformance requirement

EPS AKA is the authentication and key agreement procedure that shall be used over E-UTRAN.

Before security can be activated, the MME and the UE need to establish an EPS security context. Usually, the EPS security context is created as the result of an authentication procedure between MME and UE. The EPS security context parameters shall be stored on the USIM if the corresponding file is present. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

These EMM parameters can only be used if the IMSI from the USIM matches the IMSI stored in the non-volatile memory; else the UE shall delete the EMM parameters.

- TS 24.301 [26], clause 4.4.2.1 and Annex C;
- TS 31.102 [4], clause 4.2.92;
- TS 33.401 [27], clause 6.1.1.

11.3.3 Test purpose

- 1) To verify that the ME generates the EPS security context identified by a key set identifier for E-UTRAN (eKSI) and stores all inside a non-volatile memory in the ME as EMM information is not available on the USIM.
- 2) To verify that UE deletes existing EMM parameters from the ME's non-volatile memory in case a different IMSI is activated.

11.3.4 Method of test

11.3.4.1 Initial conditions

For this test an E-USS or NB-SS is required.

The E-USS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The default UICC (without the service "EMM Information") is installed into the Terminal.

11.3.4.2 Procedure

- a) The UE is switched on.
- b) After receipt of an *RRConnectionRequest/RRConnectionRequest-NB* from the UE the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- c) During registration and after receipt of an *AttachRequest* (included in the *RRConnectionSetupComplete/RRConnectionSetupComplete-NB*) from the UE, the E-USS/NB-SS initiates the EPS authentication and AKA procedure. The E-USS/NB-SS uses
eKSI: 00
- d) Afterwards the E-USS/NB-SS transmits a (NAS) *SecurityModeCommand* message to activate NAS security, and after receiving (NAS) *SecurityModeComplete* from the UE, the E-USS/NB-SS sends *AttachAccept* to the UE with:
TAI (MCC/MNC/TAC):246/081/0001
GUTI: "24608100010266345678"
- e) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRConnectionRelease/RRConnectionRelease-NB* to the UE.
- f) The UE is switched off and performs the *Detach* procedure.
- g) A new UICC with the following configuration is activated:
The default UICC with the following exception: The IMSI is set to "246081222233333".
- h) The Terminal is switched on.
- i) After receipt of an *RRConnectionRequest/RRConnectionRequest-NB* from the UE the E-USS/NB-SS sends *RRConnectionSetup/RRConnectionSetup-NB* to the UE, followed by *RRConnectionSetupComplete/RRConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- j) During registration and after receipt of an *AttachRequest* (included in the *RRConnectionSetupComplete/RRConnectionSetupComplete-NB*) from the UE, E-USS/NB-SS transmits a (NAS) *SecurityModeCommand* message to activate NAS security using the last known K_{ASME} .
- k) The UE responds with (NAS) *SecurityModeReject*.
- l) The E-USS/NB-SS sends *RRConnectionRelease/RRConnectionRelease-NB* to the UE.

11.3.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} .
- 2) During step c) the UE shall send the *AuthenticationResponse* message.
- 3) During step d) the UE shall send the (NAS) *SecurityModeComplete* message.
- 4) During step j) the UE shall indicate in the *AttachRequest* that no key is available.
- 5) After step j) the UE shall send the (NAS) *SecurityModeReject* message.

11.4 EPS NAS Security Context Storage

11.4.1 Definition and applicability

The security parameters for authentication, integrity protection and ciphering are tied together in an EPS security context and identified by a key set identifier for E-UTRAN (eKSI). The relationship between the security parameters is defined in 3GPP TS 33.401 [27].

The EPS security context parameters shall be stored on the USIM if the corresponding file is present. If the corresponding file is not present on the USIM, these EMM parameters except allowed CSG list are stored in a non-volatile memory in the ME together with the IMSI from the USIM.

The EF_{EPSNSC} contains the EPS NAS Security context as defined in TS 33.401 [27]. This file shall contain only one record and shall be updated only when the requirements defined in TS 33.401 [27] are met.

11.4.2 Conformance requirement

EPS AKA is the authentication and key agreement procedure that shall be used over E-UTRAN.

Before security can be activated, the MME and the UE need to establish an EPS security context. Usually, the EPS security context is created as the result of an authentication procedure between MME and UE. The EPS security context parameters shall be stored on the USIM if the corresponding file is present, and shall be updated only when the requirements defined in TS 33.401 [27] are met.

- TS 24.301 [26], clause 4.4.2.1 and Annex C;
- TS 31.102 [4], clause 4.2.92 and 5.2.28;
- TS 33.401 [27], clause 6.1.1, 7.2.5.2, 7.2.6.1 and 7.2.6.3.

11.4.3 Test purpose

The update of EPS NAS security context shall be according to the rules and procedures specified in TS 33.401 [27], clause 6.1.1, 7.2.5.2, 7.2.6.1 and 7.2.6.3.

11.4.4 Method of test

11.4.4.1 Initial conditions

For this test an E-USS or a NB-SS is required.

The E-USS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on one cell, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used.

11.4.4.2 Procedure

- a) The UE is switched on.

- b) After receipt of an *RRCCConnectionRequest/RRCCConnectionRequest-NB* from the UE the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- c) The E-USS/NB-SS receives an *AttachRequest* (included in the *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB*) from the UE.
- d) The E-USS/NB-SS initiates the EPS authentication and AKA procedure. The E-USS/NB-SS uses
eKSI: '00'
- e) Afterwards the E-USS/NB-SS transmits a (NAS) *SecurityModeCommand* message to activate NAS security, and after receiving (NAS) *SecurityModeComplete* from the UE, the E-USS/NB-SS sends *AttachAccept* to the UE with:

TAI (MCC/MNC/TAC):246/081/0001

GUTI: "24608100010266345678"
- f) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB*, to the UE.
- g) The E-USS/NB-SS sends *Paging/Paging-NB* to the UE using the S-TMSI.
 - for WB-S1: with CN domain indicator set to "PS".with CN domain indicator set to "PS".
- h) After receipt of a *RRCCConnectionRequest/RRCCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* message to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- i) The UE sends:
 - for WB-S1: *EMM Service Request* followed by the activation of AS security by the E-USS and the Dedicated EPS bearer.
 - for NB-IoT: *Control Plane Service Request*, the NB-SS sends a *Service Accept*.
- j) The following is checked:
 - for WB-S1: After keeping the Dedicated EPS Bearer active for 5 seconds, the E-USS sends *RRCCConnectionRelease* to the UE.
 - for NB-IoT: After keeping the Default EPS Bearer active for 5 seconds, the NB-SS sends *RRCCConnectionRelease-NB* to the UE.

11.4.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} and EF_{EPSNSC}.
- 2) After step a) and before step d) the UE shall either keep the content of EF_{EPSNSC} as specified in the initial conditions or invalidate the content of EF_{EPSNSC} as described in TS 31.102 [4], clause 4.2.92.
- 3) During step d) the UE shall send the *AuthenticationResponse* message.
- 4) During step e) the UE shall send the (NAS) *SecurityModeComplete* message.
- 5) After step f) the UE shall have entered idle mode.
- 6) After step i) the UE shall have
 - for WB-S1: a Dedicated EPS bearer established.
 - for NB-IoT: a Default bearer established.
- 7) During steps d), e), f), g), h), i) and j) the UE shall not update EF_{EPSNSC}.

12 Non Access Stratum (NAS) Configuration parameter handling

12.1 EF_{NASCONFIG} – NAS signaling priority handling

12.1.1 Definition and applicability

If the UE is configured for NAS signalling priority (see 3GPP TS 24.368 [36], 3GPP TS 31.102 [4]), the UE shall indicate this by including the Device properties IE in the appropriate NAS message and setting the low priority indicator to "MS is configured to NAS signalling low priority". This NAS signalling low priority indication can be used by the network for NAS level mobility management congestion control on a per core network node basis and APN based congestion control.

The test case is covered in TS 34.123-1 [38] clauses 9.4.3.7, 9.4.5.5, 11.1.1.3, 11.1.1.4, 11.1.3.4, 11.2.2.3, 12.4.1.1e and 12.4.3.2a. Refer to CR #0229 for details.

12.1.2 Void

12.1.3 Void

12.1.4 Void

12.1.5 Void

12.2 EF_{NASCONFIG} – NMO I Network Mode of Operation I handling

12.2.1 Definition and applicability

The behaviour of the UE with respect to NMO I is determined by the combination of PS domain specific system information IE and the setting of the parameter "NMO_I_Behaviour" in the NAS configuration Management Object as specified in 3GPP TS 24.368 [36] or in USIM file NASCONFIG as specified in 3GPP TS 31.102 [4].

The test case is covered in TS 34.123-1 [38] clause 12.2.2.3a. Refer to CR #0230 for details.

12.2.2 Void

12.2.3 Void

12.2.4 Void

12.2.5 Void

12.3 EF_{NASCONFIG} – Attach with IMSI handling

12.3.1 Definition and applicability

The AttachWithIMSI leaf indicates whether attach with IMSI is performed when moving to a non-equivalent PLMN as specified in 3GPP TS 24.008 [16] and 3GPP TS 24.301 [26].

The test case is covered in TS 34.123-1 [38] clause 12.2.1.1a. Refer to CR #0224 for details.

12.3.2 Void

12.3.3 Void

12.3.4 Void

12.3.5 Void

12.4 EF_{NASCONFIG} – Verifying Minimum Periodic Search Timer

12.4.1 Definition and applicability

The MinimumPeriodicSearchTimer leaf gives a minimum value in minutes for the timer T controlling the periodic search for higher prioritized PLMNs as specified in 3GPP TS 23.122 [31].

If the MS is configured for Fast First Higher Priority PLMN search and the MinimumPeriodicSearchTimer is configured as specified in 3GPP TS 24.368 [36] or 3GPP TS 31.102 [4], the MS shall not use a value for T that is less than the MinimumPeriodicSearchTimer.

The test case is covered in TS 34.123-1 [38] clauses 9.4.5.4 and 9.4.5.4.7. Refer to CR #0228 for details.

12.4.2 Void

12.4.3 Void

12.4.4 Void

12.4.5 Void

12.5 EF_{NASCONFIG} – Extended access barring handling

12.5.1 Definition and applicability

Extended Access Barring (EAB) is a mechanism to control Mobile Originating access attempts from UEs that are configured for EAB in order to prevent overload for the access network and/or the core network. In congestion situations, the operator can restrict access from UEs configured for EAB while permitting access from other UEs.

The ExtendedAccessBarring leaf indicates whether the extended access barring is applicable for the UE as specified in 3GPP TS 24.008 [16] and 3GPP TS 24.301 [26].

The test case is covered in TS 34.123-1 [38] clauses 8.1.1.20, 9.4.11, 12.2.1.16 and 12.4.1.9. Refer to CR #0226 for details.

12.5.2 Void

12.5.3 Void

12.5.4 Void

12.5.5 Void

12.6 EF_{NASCONFIG} – Verifying Timer T3245 Behaviour

12.6.1 Definition and applicability

For an MS that is configured to use timer T3245 (see 3GPP TS 24.368 [36] or 3GPP TS 31.102 [4]) and when the MS adds a PLMN identity to the "forbidden PLMN list" or the "forbidden PLMNs for GPRS service" list or sets the SIM/USIM as invalid for non-GPRS services or GPRS services or both, and timer T3245 is not running, the MS shall start timer T3245 with a random value, uniformly drawn from the range between 12h and 24h.

Upon expiry of the timer T3245, the MS shall erase the "forbidden PLMN list" and the "forbidden PLMNs for GPRS service" list and set the SIM/USIM to valid for non-GPRS services and GPRS services.

12.6.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply the setting present in EF_{NASCONFIG} for "Timer T3245 Behaviour".

Reference:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.7.
- TS 24.008 [16], clause 4.1.1.6

12.6.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the USS.
- 3) To verify that the UE erase the "forbidden PLMN list" and the "forbidden PLMNs for GPRS service" list upon expiry of the timer T3245.

12.6.4 Method of test

12.6.4.1 Initial conditions

- a) The USS transmits on the BCCH, with the following network parameters:
 - Attach/detach: disabled.
 - LAI (MCC/MNC/LAC):234/005/0001.

- RAI (MCC/MNC/LAC/RAC): 234/005/0001/05
- Access control: unrestricted.

b) The default Non Access Stratum Configuration UICC is installed into the Terminal with the following exception:

EF_{FPLMN} (Forbidden PLMNs)

Logically:

PLMN1:	empty
PLMN2:	empty
PLMN3:	empty
PLMN4:	empty
PLMN5:	empty
PLMN6:	empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Coding:	B13	B14	B15	B16	B17	B18						
Hex	FF	FF	FF	FF	FF	FF						

EF_{NASCONFIG} (Non Access Stratum Configuration):

Logically:

NAS signalling priority value:	Reserved (NAS signalling low priority is not used)
NMO I Behaviour value:	"NMO I, Network Mode of Operation I" indication is not used
Attach with IMSI value:	attach with IMSI is performed when moving to a non-equivalent PLMN
Minimum Periodic Search Timer value:	00
Extended access barring value:	extended access barring is not applied for the UE
Timer T3245 Behaviour value:	T3245 is used

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	00	81	00	00	82	01	00	83	01

Coding:	B12	B13	B14	B15	B16	B17	B18				
Hex	00	84	01	00	85	01	01				

12.6.4.2 Procedure

- a) The UE is powered on.
- b) Depending on which domain the UE is going to be registered on, the UE attempts to perform CS, PS or CS/PS registration to the USS.
- c) After receipt of a *LOCATION UPDATING REJECT* and/or *ATTACH REJECT* message during registration with the cause "PLMN not allowed" the Terminal shall update the EF_{FPLMN} in the USIM. T3245 will start.
- d) After the expiry of timer T3245, the terminal shall establish the RRC connection again.
- e) Depending on which domain the UE is going to be registered on, the UE performs CS, PS or CS/PS registration to the USS.
- f) The UE is powered down.

12.6.5 Acceptance criteria

- a) After power on in step a) the UE shall read EF_{NASCONFIG}
- b) The UE shall update EF_{FPLMN} in step c) as following:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: 234 005 (MCC MNC)
 PLMN2: empty
 PLMN3: empty
 PLMN4: empty
 PLMN5: empty
 PLMN6: empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	32	54	00	FF	FF	FF	FF	FF	FF	FF	FF	FF

Coding:	B13	B14	B15	B16	B17	B18						
Hex	FF	FF	FF	FF	FF	FF						

c) The UE shall update EF_{FPLMN} in step e) as following:

EF_{FPLMN} (Forbidden PLMNs)

Logically: PLMN1: empty
 PLMN2: empty
 PLMN3: empty
 PLMN4: empty
 PLMN5: empty
 PLMN6: empty

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF	FF

Coding:	B13	B14	B15	B16	B17	B18						
Hex	FF	FF	FF	FF	FF	FF						

12.7 EF_{NASCONFIG} – Override NAS signalling low priority

12.7.1 Definition and applicability

The "Override NAS signalling low priority" indicates whether the UE can override the NAS Signalling Priority configuration in the NAS message as specified in 3GPP TS 24.008 [16] and 3GPP TS 24.301 [26].

12.7.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply correctly the setting present in EF_{NASCONFIG} for "Override NAS signalling low priority" to connect to the network.

References:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.9.
- TS 24.008 [16], clause 1.8, 6.1.3.1.3.2, 6.1.3.12, 4.7.13.5
- TS 23.060 [25], clause 5.3.13.6.

12.7.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the USS.

12.7.4 Method of test

12.7.4.1 Initial conditions

- a) The USS transmits on the BCCH, with the following network parameters:
 - Attach/detach: disabled.
 - LAI (MCC/MNC/LAC): 246/081/0001.
 - RAI (MCC/MNC/LAC/RAC): 246/081/0001/05.
 - Access control: unrestricted.
- b) The default Non Access Stratum Configuration UICC is installed into the Terminal with the following exception:

EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value: NAS signalling low priority

NMO I Behaviour value: "NMO I, Network Mode of Operation I" indication is not used

Attach with IMSI value: normal behaviour is applied

Minimum Periodic Search Timer value: 00

Extended access barring value: extended access barring is applied for the UE

Timer T3245 Behaviour value: T3245 not used

Override NAS signalling low priority: Indicates that the UE can override the NAS signalling low priority indicator

Override Extended access barring: Indicates that the UE can override extended access barring

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	01	81	01	00	82	01	00	83	01
Coding:	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Hex	00	84	01	01	85	01	00	86	01	01	87
Coding:	B23	B24									
Hex	01	01									

12.7.4.2 Procedure

- a) The UE is powered on where the UICC is configured as defined in b) in the initial conditions.
- b) The user requests activation of a PDP context. After receipt of *ACTIVATE PDP CONTEXT REQUEST* from the UE, the USS sends *ACTIVATE PDP CONTEXT REJECT* to the UE indicating:
 - SM cause value # 26: insufficient resources;
 - Back-off timer T3396: 1 minute
- c) Before timer T3396 expires, the users request activation of a PDP context, the UE sends *ACTIVATE PDP CONTEXT REQUEST*, the USS sends *ACTIVATE PDP CONTEXT ACCEPT* to the UE.
- d) The UE is powered down.

12.7.5 Acceptance criteria

- a) After power on in step a) the UE shall read EF_{NASCONFIG}
- b) In step b) the UE shall set in *ACTIVATE PDP CONTEXT REQUEST* message the low priority indicator to "MS is configured for NAS signalling low priority" in the device properties.
- c) In step c) the UE shall send *ACTIVATE PDP CONTEXT REQUEST* message where the low priority indicator is set to "MS is not configured for NAS signalling low priority" in the device properties.

12.8 EF_{NASCONFIG} – Override Extended access barring

12.8.1 Definition and applicability

The "Override Extended Access Barring" indicates whether the UE can override "Extended Access Barring" configured to extended access barring.

The handling of extended access barring for the UE when the Override Extended Access Barring is used is specified in 3GPP TS 24.008 [16] and 3GPP TS 24.301 [26].

12.8.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply correctly the setting present in EF_{NASCONFIG} for "Override Extended Access Barring" to connect to the network.

References:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.10.
- TS 23.060 [25], clause 5.3.13.6.
- TS 23.401 [37], clause 4.3.17.2, 4.3.17.4
- TS 22.011 [6], clause 4.3.4.1.

12.8.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the USS.
- 3) To verify that the UE overrides "Extended Access Barring" when the Override Extended Access Barring is used

12.8.4 Method of test

12.8.4.1 Initial conditions

a) The USS transmits on the BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- RAI (MCC/MNC/LAC/RAC): 246/081/0001/05.
- Access control: unrestricted.
- SYSTEM INFORMATION BLOCK TYPE 21:

EAB Authorization Mask: 0010000000 (Mobile stations configured for EAB and a member of Access Class 7 are barred)

EAB Subcategory (2 bit): 00 (The EAB Authorization mask is applicable to all mobile stations configured for EAB.)

b) The default Non Access Stratum Configuration UICC is installed into the Terminal with the following exception:

EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value: Reserved (NAS signalling low priority is not used)

NMO I Behaviour value: "NMO I, Network Mode of Operation I" indication is not used

Attach with IMSI value: normal behaviour is applied

Minimum Periodic Search Timer value: 00

Extended access barring value: extended access barring is applied for the UE

Timer T3245 Behaviour value: T3245 not used

Override NAS signalling low priority: Indicates that the UE can override the NAS signalling low priority indicator

Override Extended access barring: Indicates that the UE can override extended access barring

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	00	81	01	00	82	01	00	83	01
Coding:	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Hex	00	84	01	01	85	01	00	86	01	01	87
Coding:	B23	B24									
Hex	01	01									

12.8.4.2 Procedure

- a) The UE shall be powered on where the UICC is configured as defined in b) in the initial conditions and the USS transmits of the BCCH as defined inside the initial conditions.
- b) User request activate a PDP context. The UE sends *ACTIVATE PDP CONTEXT REQUEST*, the USS sends *ACTIVATE PDP CONTEXT ACCEPT* to the UE.
- c) The UE is powered down

12.8.5 Acceptance criteria

- a) After power on in step a) the UE shall reads EF_{NASCONFIG}
- b) In step b) the UE shall send *ACTIVATE PDP CONTEXT REQUEST* message to the USS.

12.9 EF_{NASCONFIG} – Fast First Higher Priority PLMN Search

12.9.1 Definition and applicability

The "Fast First Higher Priority PLMN Search" indicates whether the UE performs the first search for a higher priority PLMN after at least 2 minutes and at most T minutes upon entering a VPLMN as specified in 3GPP TS 23.122 [31].

12.9.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply correctly the setting present in EF_{NASCONFIG} for "Fast First Higher Priority PLMN Search" to connect to the network.

References:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.10a.
- TS 23.122 [31], clause 4.4.3.3.1

12.9.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the USS.
- 3) To verify that the UE performs first search for higher priority PLMN according to "Fast First Higher Priority PLMN Search" configuration when this parameter is present and used.

12.9.4 Method of test

12.9.4.1 Initial conditions

- a) The USS transmits on BCCH, with the following network parameters:
 - Attach/detach: disabled.
 - LAI (MCC/MNC/LAC): 244/009/0001.
 - RAI (MCC/MNC/LAC/RAC): 244/009/0001/05
 - Access control: unrestricted.
- b) After the registration of UE the USS transmits on a second BCCH, with the following network parameters:
 - Attach/detach: disabled.
 - LAI (MCC/MNC/LAC): 244/081/0001.
 - RAI (MCC/MNC/LAC/RAC): 244/081/0001/05
 - Access control: unrestricted.
- c) The default Non Access Stratum Configuration UICC is installed into the Terminal with the following exception:

EF_{HPPLMN} (Higher Priority PLMN Search period)

Logically: set to 6 minutes

Coding:	B1
Hex	01

EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

- NAS signalling priority value: Reserved (NAS signalling low priority is not used)
- NMO I Behaviour value: "NMO I, Network Mode of Operation I" indication is not used
- Attach with IMSI value: normal behaviour is applied
- Minimum Periodic Search Timer value: 00
- Extended access barring value: extended access barring is not applied for the UE
- Timer T3245 Behaviour value: T3245 not used
- Override NAS signalling low priority: Indicates that the UE cannot override the NAS signalling low priority indicator
- Override Extended access barring: Indicates that the UE cannot override extended access barring
- Fast First Higher Priority PLMN Search: Indicates that the Fast First Higher Priority PLMN Search is enabled
- EUTRA Disabling Allowed For EMM Cause15: disabled
- SM_RetryWaitTime: E0
- SM_RetryAtRATChange: UE is allowed to retry the corresponding ESM procedure in S1 mode if an SM procedure was rejected in A/Gb or Iu mode, and to retry the corresponding SM procedure in A/Gb or Iu mode if an ESM procedure was rejected in S1 mode.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	00	81	01	00	82	01	00	83	01
Coding:	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Hex	00	84	01	00	85	01	00	86	01	00	87
Coding:	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33
Hex	01	00	88	01	01	89	01	00	8A	01	E0
Coding:	B34	B35	B36								
Hex	8B	01	00								

12.9.4.2 Procedure

- a) The UE shall be powered on where the UICC is configured as defined in b) in the initial conditions and the USS starts to transmit on the first BCCH with the MMC/MNC 246/009.
- b) Depending on which domain the UE is going to be registered on, the UE performs CS, PS or CS/PS registration to the USS.
- c) The USS starts to send on the second BCCH with the MCC/MNC 244/081.
- d) Depending on which domain the UE is going to be registered on, the UE performs CS, PS or CS/PS registration to the USS on the cell related to the BCCH transmitting MCC/MNC 244/081.
- e) The UE is powered down.

12.9.5 Acceptance criteria

- a) After power on in step a) the UE shall read EF_{NASCONFIG}
- b) The UE shall perform step d) after 2 - 6 minutes.

12.10 EF_{NASCONFIG} – E-UTRA Disabling Allowed for EMM cause #15

12.10.1 Definition and applicability

The "EUTRA Disabling Allowed For EMM Cause #15" indicates whether the UE is allowed to disable the E-UTRA capability when it receives the Extended EMM cause IE with value "E-UTRAN not allowed" as described in 3GPP TS 24.301 [26].

12.10.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply the setting present in EF_{NASCONFIG} for "EUTRA Disabling Allowed For EMM Cause #15" to connect to the network.

References:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.10b.
- TS 24.301 [26], clause 4.5, 5.5.1.2.5

12.10.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the USS
- 3) To verify that the UE shall disable the E-UTRA capability and search for a suitable cell in GERAN or UTRAN radio access technology upon ATTACH REJECT reception that include both EMM cause #15 "no suitable cells in tracking area" and an Extended EMM cause IE with value "E-UTRAN not allowed" if "EUTRA Disabling Allowed For EMM Cause #15" is present and enabled in the UE.

12.10.4 Method of test

12.10.4.1 Initial conditions

- a) For this test both a UTRAN USS and an E-UTRAN E-USS is needed.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/003/0001.
- Access control: unrestricted.

At step c) the E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/003/0002.
- Access control: unrestricted.

At step c) the USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC):244/003/0003.
- Access control: unrestricted.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

- b) The default Non Access Stratum Configuration of E-UTRAN/EPC UICC is installed into the Terminal with the following exception:

EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value: Reserved (NAS signalling low priority is not used)
 NMO I Behaviour value: "NMO I, Network Mode of Operation I" indication is not used
 Attach with IMSI value: normal behaviour is applied
 Minimum Periodic Search Timer value: 00
 Extended access barring value: extended access barring is not applied for the UE
 Timer T3245 Behaviour value: T3245 not used
 Override NAS signalling low priority: Indicates that the UE cannot override the NAS signalling low priority indicator
 Override Extended access barring: Indicates that the UE cannot override extended access barring
 Fast First Higher Priority PLMN Search: Indicates that the Fast First Higher Priority PLMN Search is enabled
 EUTRA Disabling Allowed For EMM Cause15: enabled
 SM_RetryWaitTime: E0
 SM_RetryAtRATChange: UE is allowed to retry the corresponding ESM procedure in S1 mode if an SM procedure was rejected in A/Gb or Iu mode, and to retry the corresponding SM procedure in A/Gb or Iu mode if an ESM procedure was rejected in S1 mode.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	00	81	01	00	82	01	00	83	01
Coding:	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Hex	00	84	01	00	85	01	00	86	01	00	87
Coding:	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33
Hex	01	00	88	01	00	89	01	01	8A	01	E0
Coding:	B34	B35	B36								
Hex	8B	01	00								

12.10.4.2 Procedure

- a) The UE shall be powered on where the UICC is configured as defined in b) in the initial conditions and the E-USS starts to send only on the BCCH with the MCC/MNC 244/003.
- b) After receipt of *AttachRequest* from the UE, the E-USS sends *Attach Reject* message with:
- EMM cause set to #15: "No suitable cells in tracking area",

- Extended EMM cause IE: "E-UTRAN not allowed"
- c) The E-USS starts to send on the BCCH with MCC/MNC 244/003 and the USS starts to send on the BCCH with MCC/MNC 244/003.
- d) After receipt of an *RRConnectionRequest* from the UE, the USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the USS.
- e) The UE is powered down.

12.10.5 Acceptance criteria

- a) After power on in step a) the UE shall read EF_{NASCONFIG}
- b) In step d) the UE shall send a *RRConnectionRequest* on the UTRAN-cell related to the BCCH transmitting MCC/MNC 244/003 to the USS.

12.11 EF_{NASCONFIG} – SM_RetryWaitTime

12.11.1 Definition and applicability

The "SM_RetryWaitTime" indicates a configured UE retry wait time value applicable when in HPLMN or EHPLMN (see 3GPP TS 23.122 [31]) for controlling the UE session management retry behaviour when prior session management request was rejected by the network with cause value #8, #27, #32, #33 as specified in 3GPP TS 24.008 [16] and 3GPP TS 24.301 [26].

SM_RetryWaitTime shall be coded in the same format as the value part of GPRS Timer 3 IE as specified in Table 10.5.163a/3GPP TS 24.008 [16] converted into a decimal value.

12.11.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply the setting present in EF_{NASCONFIG} for "SM_RetryWaitTime" to connect to the network.

Reference:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.10c.
- TS 24.008 [16], clauses 6.1.3.1.3.3, 10.5.7.4a.

12.11.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the USS.
- 3) To verify that the UE behaves as described in TS 24.008 [16] clause 6.1.3.1.3.3, using the default value of 12 minutes for the back-off timer when the SM Retry Timer value is not configured.
- 4) To verify that the UE behaves as described in TS 24.008 [16] clause 6.1.3.1.3.3, using the configured SM Retry Timer value as back-off timer value.

12.11.4 Method of test

12.11.4.1 Initial conditions

- a) The USS transmits on BCCH, with the following network parameters:

- Attach/detach: disabled.
- LAI (MCC/MNC/LAC): 246/081/0001.
- RAI (MCC/MNC/LAC/RAC): 246/081/0001/05.
- Access control: unrestricted.

b) The default Non Access Stratum Configuration UICC is installed into the Terminal with the following exception:

EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value: Reserved (NAS signalling low priority is not used)

NMO I Behaviour value: "NMO I, Network Mode of Operation I" indication is not used

Attach with IMSI value: normal behaviour is applied

Minimum Periodic Search Timer value: 00

Extended access barring value: extended access barring is not applied for the UE

Timer T3245 Behaviour value: T3245 not used

Override NAS signalling low priority: Indicates that the UE cannot override the NAS signalling low priority indicator

Override Extended access barring: Indicates that the UE cannot override extended access barring

Fast First Higher Priority PLMN Search: Indicates that the Fast First Higher Priority PLMN Search is not enabled

EUTRA Disabling Allowed For EMM

Cause15: disabled

SM_RetryWaitTime: 60 seconds

SM_RetryAtRATChange: UE is allowed to retry the corresponding ESM procedure in S1 mode if an SM procedure was rejected in A/Gb or Iu mode, and to retry the corresponding SM procedure in A/Gb or Iu mode if an ESM procedure was rejected in S1 mode.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	00	81	01	00	82	01	00	83	01
Coding:	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Hex	00	84	01	00	85	01	00	86	01	00	87
Coding:	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33
Hex	01	00	88	01	00	89	01	00	8A	01	7E
Coding:	B34	B35	B36								
Hex	8B	01	00								

12.11.4.2 Procedure

- a) The UE is powered on where the UICC is configured as defined in b) in the initial conditions.
- b) User request activate a PDP context. After receipt of *ACTIVATE PDP CONTEXT REQUEST* from the UE, the USS sends *ACTIVATE PDP CONTEXT REJECT* to the UE indicating:
 - SM cause value #8: operator determined barring;
- c) User request activate a PDP context and the UE sends *ACTIVATE PDP CONTEXT REQUEST*, the USS sends *ACTIVATE PDP CONTEXT ACCEPT* to the UE.
- d) The UE is powered down.

12.11.5 Acceptance criteria

- a) After power on in step a) the UE shall read EF_{NASCONFIG}
- b) In step c) the UE shall send *ACTIVATE PDP CONTEXT REQUEST* message after the SM_RetryWaitTime of 1 minute has expired.

12.12 EF_{NASCONFIG} – SM_RetryAtRATChange

12.12.1 Definition and applicability

The "SM_RetryAtRATChange" indicates the UE's retry behaviour when in HPLMN or EHPLMN (see 3GPP TS 23.122 [31]) after inter-system change between S1 mode and A/Gb or Iu mode as specified in 3GPP TS 24.008 [16] and 3GPP TS 24.301 [26].

12.12.2 Conformance requirement

Editor's note: this clause is for future study.

12.12.3 Test purpose

Editor's note: this clause is for future study.

12.12.4 Method of test

Editor's note: this clause is for future study.

12.12.5 Acceptance criteria

Editor's note: this clause is for future study.

12.13 EF_{NASCONFIG} – No E-UTRA Disabling In 5GS

12.13.1 Definition and applicability

The "No E-UTRA Disabling In 5GS" indicates whether E-UTRA Disabling In 5GS is disabled or enabled, as described in TS 24.368 [36],

12.13.2 Conformance requirement

For NAS configuration parameter by USIM, the UE shall check and apply the setting present in EF_{NASCONFIG} for " No E-UTRA Disabling In 5GS".

References:

- TS 31.102 [4], clauses 4.2.94, 5.2.29
- TS 24.368 [36], clause 5.10zt.
- TS 24.301 [26], clause 4.5, 5.5.1.2.6

12.13.3 Test purpose

- 1) To verify that the UE reads the NAS configuration stored on the USIM.
- 2) To verify that the UE applies the USIM stored NAS configuration correctly to connect to the E-USS and NG-SS.
- 3) To verify that the UE shall not disable the E-UTRA capability if "No E-UTRA Disabling In 5GS" is enabled at the UE and the UE selects NG-RAN radio access technology (see 3GPP TS 24.368 [36] or 3GPP TS 31.102 [4]); otherwise, the UE may disable the E-UTRA capability.

12.13.4 Method of test

12.13.4.1 Initial conditions

- a) For this test both a NG-RAN NG-SS and an E-UTRAN E-USS are needed.

At step a) The NG-SS is powered off. The E-USS is powered on and transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/003/0001.
- Access control: unrestricted.

At step d) The E-USS is powered off. The NG-SS is powered on and transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/003/000002.
- Access control: unrestricted.

The 5G-NR UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

- b) The default Non Access Stratum Configuration of 5G-NR UICC is installed into the Terminal with the following exception:

EF_{NASCONFIG} (Non Access Stratum Configuration)

Logically:

NAS signalling priority value:	Reserved (NAS signalling low priority is not used)
NMO I Behaviour value:	"NMO I, Network Mode of Operation I" indication is not used
Attach with IMSI value:	normal behaviour is applied
Minimum Periodic Search Timer value:	00
Extended access barring value:	extended access barring is not applied for the UE
Timer T3245 Behaviour value:	T3245 not used
Override NAS signalling low priority:	Indicates that the UE cannot override the NAS signalling low priority indicator
Override Extended access barring:	Indicates that the UE cannot override extended access barring
Fast First Higher Priority PLMN Search:	Indicates that the Fast First Higher Priority PLMN Search is not enabled
EUTRA Disabling Allowed For EMM Cause15:	disabled
SM_RetryWaitTime:	00
SM_RetryATRATChange:	UE is allowed to retry the corresponding ESM procedure in S1 mode if an SM procedure was rejected in A/Gb or Iu mode, and to retry the corresponding SM procedure in A/Gb or Iu mode if an ESM procedure was rejected in S1 mode.
Exception Data Reporting Allowed:	Indicates whether the UE in NB-S1 mode is allowed to use the RRC establishment cause mo-ExceptionData.
No E-UTRA Disabling In 5GS:	Indicates whether E-UTRA Disabling In 5GS is disabled or enabled. Its value is set to 1.

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	80	01	00	81	01	00	82	01	00	83	01
Coding:	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
Hex	00	84	01	00	85	01	00	86	01	00	87
Coding:	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33
Hex	01	00	88	01	00	89	01	00	8A	01	00
Coding:	B34	B35	B36	B37	B38	B39	B40	B41	B42		
Hex	8B	01	00	8D	01	00	90	01	01		

12.13.4.2 Procedure

- a) The UE shall be powered on where the UICC is configured as defined in b) in the initial conditions, and only the E-USS starts to send on the BCCH with the MCC/MNC 244/003.
- b) The UE sends a ATTACH REQUEST message, the E-USS waits 25 seconds (15 seconds T3430 and 10 seconds T3411). This step is repeated for 4 times.
- c) The UE sends a ATTACH REQUEST (Attach attempt counter = 5), the E-USS releases the RRC connection.
- d) Only the NG-SS starts to send on the BCCH with the MCC/MNC 244/003. The UE sends a REGISTRATION REQUEST message indicating the 5GS registration type IE as "initial registration", and successfully register to the NG-SS.
- e) The UE is powered down.

12.13.5 Acceptance criteria

- a) After power on in step a) the UE shall read EF_{NASCONFIG}.
- b) In step d) the UE shall transmit a REGISTRATION REQUEST message with E-UTRA Capability enabled, in accordance with Table 12-1:

Table 12.13.5-1: REGISTRATION REQUEST

Information Element	Value/remark	Comment
5GS registration type value	'001'B	Initial registration
5GMM capability		
S1 mode	'1'B	S1 mode supported

13 UICC interface during PSM

13.1 UICC interface in PSM handling for E-UTRAN – No UICC deactivation in PSM

13.1.1 Definition and applicability

PSM is intended for UEs that are expecting only infrequent mobile originating and terminating services and that can accept a corresponding latency in the mobile terminating communication. In order to reduce power consumption while in PSM, and only in case the PIN of the USIM is disabled, the ME may optionally deactivate the UICC after entering the PSM.

13.1.2 Conformance requirement

In order to reduce power consumption while the ME is in PSM, and only in case the PIN of the USIM is disabled, the ME may optionally deactivate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]) after entering the PSM.

Reference:

- TS 31.102 [4], clause 5.1.10;
- TS 24.301 [26], clauses 5.3.5 and 5.3.11.
- TS 31.101 [39], clause 6A.1.

13.1.3 Test purpose

- 1) To verify that UE does not deactivate the UICC in case the PIN for the USIM is enabled and verified.

13.1.4 Method of test

13.1.4.1 Initial conditions

The UE is configured to use Power Saving Mode.

The UE is configured to use the timer T3324 set to T3324_V.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UMPC} (UICC Maximum Power Consumption)

Logically:

UICC maximum power consumption:	60 mA
Operator defined time out (T _{OP}):	5 seconds
Additional information:	UICC does not require increased idle current
	UICC does not support the UICC suspension procedure
Byte 4 and byte 5:	RFU

Byte:	B1	B2	B3	B4	B5
Coding:	3C	05	00	00	00

The PIN of the USIM is enabled and verified

13.1.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including T3324 set to T3324_V.
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message contains T3324 set to T3324_V and T3412 set to T3412_V.. It shall not contain the eDRX parameters
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRConnectionRelease/RRConnectionRelease-NB*, to the UE.
- e) After the T3412 timer expires the UE sends *TRACKING AREA UPDATE REQUEST*
- f) The E-USS/NB-SS sends *TRACKING AREA UPDATE ACCEPT*.
- g) The UE is switched off.

13.1.5 Acceptance criteria

- 1) After step c) the UE shall not deactivate the UICC or send SUSPEND UICC command.

13.2 UICC interface in PSM handling for E-UTRAN – PSM not accepted by E-USS/NB-SS

13.2.1 Definition and applicability

PSM is intended for UEs that are expecting only infrequent mobile originating and terminating services and that can accept a corresponding latency in the mobile terminating communication. In order to reduce power consumption while in PSM, and only in case the PIN of the USIM is disabled, the ME may optionally deactivate the UICC after entering the PSM.

13.2.2 Conformance requirement

In order to reduce power consumption while the ME is in PSM, and only in case the PIN of the USIM is disabled, the ME may optionally deactivate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]) after entering the PSM.

Reference:

- TS 31.102 [4], clause 5.1.10;
- TS 24.301 [26], clauses 5.3.5 and 5.3.11.
- TS 31.101 [39] in clause 6A.1.

13.2.3 Test purpose

- 1) To verify that UE does not deactivate the UICC in case the network is not supporting/accepting PSM.

13.2.4 Method of test

13.2.4.1 Initial conditions

The UE is configured to use Power Saving Mode.

The UE is configured to use the timer T3324 set to T3324_V.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is installed into the Terminal.

The PIN of the USIM is disabled.

13.2.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including T3324 set to T3324_V.
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message contains a T3324 set to "deactivated". It shall not contain the eDRX parameters.

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB*, to the UE
- e) After the time period *T3324_V* has passed, the E-USS/NB-SS transmits *Paging/Paging-NB* to the UE using the S-TMSI.
- f) After receipt of *RRCConnectionRequest/RRCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* message to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- g) The terminal sends *Service Request*, the E-USS/NB-SS sends *SERVICE ACCEPT* followed by *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE.
- h) The UE is switched off.

13.2.5 Acceptance criteria

- 1) After step c) the UE shall not deactivate the UICC.

13.3 UICC interface in PSM handling for E-UTRAN – UICC deactivation in PSM

13.3.1 Definition and applicability

PSM is intended for UEs that are expecting only infrequent mobile originating and terminating services and that can accept a corresponding latency in the mobile terminating communication. In order to reduce power consumption while in PSM, and only in case the PIN of the USIM is disabled, the ME may optionally deactivate the UICC after entering the PSM.

13.3.2 Conformance requirement

In order to reduce power consumption while the ME is in PSM, and only in case the PIN of the USIM is disabled, the ME may optionally deactivate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]) after entering the PSM.

In this case, the ME shall perform these steps before it can leave the PSM:

- re-activate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]),
- re-initialize the USIM (as specified in clause 5.1.1 [4]), with the exception of re-reading EFs that are not required for the verification of the USIM,
- take appropriate steps to verify that the same USIM is used.

Verification shall include at least the check of the content of the following EFs: *EF_{ICCID}*, *EF_{IMSI}* and *EF_{LOCI}*, and/or *EF_{PSLOCI}* and/or *EF_{EPSLOCI}* (depending on which of these specific EFs containing LOCI the ME used prior to entering PSM)

Reference:

- TS 31.102 [4], clause 5.1.10;
- TS 24.301 [26], clauses 5.3.5 and 5.3.11.
- TS 31.101 [39] in clause 6A.1.

13.3.3 Test purpose

- 1) To verify that when the UE enters PSM it deactivates the UICC in case the PIN for the USIM is disabled.
- 2) To verify that UE when it leaves the PSM performs the following steps:
 - re-activates the UICC;
 - re-initializes the USIM;
 - verifies the following EFs: EF_{ICCID}, EF_{IMSI}, and EF_{EPSLOC}.

13.3.4 Method of test

13.3.4.1 Initial conditions

The UE is configured to use Power Saving Mode.

The UE is configured to use the timer T3324 set to T3324_V.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is installed into the Terminal.

The PIN of the USIM is disabled.

13.3.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including T3324 set to T3324_V.
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message contains T3324 set to T3324_V and T3412 set to T3412_V. It shall not contain the eDRX parameters.
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB*, to the UE.
- e) After the T3412 timer expires the UE sends *TRACKING AREA UPDATE REQUEST*.
- f) The E-USS/NB-SS sends *TRACKING AREA UPDATE ACCEPT*.
- g) The UE is switched off.

13.3.5 Acceptance criteria

- 1) After step d) and the expiration of T3324 timer, the UE deactivates the UICC.
- 2) After step e) the UE leaves the PSM and re-activates the UICC, re-initializes the USIM and verifies the following EFs: EF_{ICCID}, EF_{IMSI} and EF_{EPSLOC}.

13.4 UICC interface in PSM for E-UTRAN – SUSPEND UICC

13.4.1 Definition and applicability

PSM is intended for UEs that are expecting only infrequent mobile originating and terminating services and that can accept a corresponding latency in the mobile terminating communication. If the UICC supports the UICC suspension mechanism (SUSPEND UICC command), the ME may suspend the UICC after entering the PSM. In this case, the ME shall successfully resume the UICC before it can leave the PSM.

13.4.2 Conformance requirement

If the UICC supports the UICC suspension mechanism (SUSPEND UICC command), the ME may suspend the UICC after entering the PSM. In this case, the ME shall successfully resume the UICC before it can leave the PSM.

Reference:

- TS 31.102 [4], clause 5.1.10;
- TS 24.301 [26], clauses 5.3.5, 5.3.11 and 5.5.1.2.2.
- TS 31.101 [39] in clause 11.1.22.

13.4.3 Test purpose

- 1) To verify that after reading EF_{UMPC} and entering the PSM the ME sends a SUSPEND UICC command to the UICC in case the UICC indicates the support of the SUSPEND UICC command.
- 2) To verify that the ME resumes the UICC before it can leave the PSM.

13.4.4 Method of test

13.4.4.1 Initial conditions

The ME is configured to use Power Saving Mode.

The ME is configured to use the timer T3324 set to T3324_V.

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UMPC}

Logically:

UICC maximum power consumption: 60 mA

Operator defined time out (T_OP): 5 seconds

Additional information:

UICC does not require increased idle current

UICC supports the UICC suspension procedure

Byte 4 and byte 5: RFU

Coding	B1	B2	B3	B4	B5
Hex	3C	05	02	00	00

The PIN of the USIM is enabled and verified.

13.4.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including T3324 set to T3324_V.
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message contains T3324 set to T3324_V and T3412 set to T3412_V. It shall not contain the eDRX parameters.
- d) After receipt of the AttachComplete during registration from the UE, the E-USS/NB-SS sends RRCConnectionRelease/RRCConnectionRelease-NB, to the UE.
- e) The ME sends SUSPEND UICC command to the UICC indicating "Minimum duration of the suspension proposed by the terminal" and the "Maximum duration of the suspension proposed by the terminal".
- f) The UICC returns a maximum suspension duration in the range proposed by the ME, Resume token and SW 9000.
- g) After the T3412 timer expires the UE sends *TRACKING AREA UPDATE REQUEST*
- h) The E-USS/NB-SS sends *TRACKING AREA UPDATE ACCEPT*.
- i) The UE is switched off.

NOTE: For testing purposes, and to not extend the test execution time the maximum suspension duration returned by the UICC shall be equal to the minimum duration of the suspension proposed by the terminal.

13.4.5 Acceptance criteria

- 1) After step a) the ME reads EF_{UMPC} to verify that the SUSPEND UICC command is supported.
- 2) After step e) the ME deactivates the UICC as specified in 3GPP TS 31.101 [39].
- 3) After step g) the ME leaves the PSM and resumes the UICC.

14 UICC interface during eDRX

14.1 UICC interface during eDRX for E-UTRAN – eDRX is not supported by the UICC

14.1.1 Definition and applicability

In order to reduce power consumption when the UE uses extended idle mode DRX cycle, the UE may optionally deactivate the UICC during the extended idle mode DRX cycle.

14.1.2 Conformance requirement

In case the UICC does not support the UICC suspension mechanism, the PIN of the USIM is disabled and deactivation of UICC is authorized in EF_{AD}, the UE may optionally deactivate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]) during the extended idle mode DRX cycle.

Reference:

- TS 31.102 [4], clause 5.1.11;
- TS 24.301 [26], clauses 5.3.12.
- TS 23.401 [37], clause 5.13a.
- TS 31.101 [39] in clause 6A.1.

14.1.3 Test purpose

- 1) To verify that UE does not deactivate the UICC in case the ME is not authorized to modify the polling interval and/or disable the UICC interface during extended DRX cycle in EF_{AD} in USIM.

14.1.4 Method of test

14.1.4.1 Initial conditions

The UE is configured to request the use of eDRX (in the ATTACH REQUEST and TRACKING AREA UPDATE messages).

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UMPC} (UICC Maximum Power Consumption)

Logically:

UICC maximum power consumption:	60 mA
Operator defined time out (T _{OP}):	5 seconds
Additional information:	UICC does not require increased idle current
	UICC does not support the UICC suspension procedure
Byte 4 and byte 5:	RFU

Byte:	B1	B2	B3	B4	B5
Coding:	3C	05	00	00	00

The PIN of the USIM is enabled and verified.

14.1.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including eDRX parameters.
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message containing eDRX set to eDRX_V and PTW set to PTW_V. If ATTACH REQUEST in step b) above also contains T3324, the ATTACH ACCEPT message shall contain T3324 set to "deactivated". If ATTACH REQUEST in step b) does not contain T3324, the ATTACH ACCEPT message shall not contain T3324.

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB*, to the UE.
- e) The E-USS/NB-SS transmits *Paging/Paging-NB* to the UE using the S-TMSI in a valid paging occasion within the PTW of the paging Hyperframes as per Idle eDRX.
- f) After receipt of *RRCConnectionRequest/RRCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* message to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- g) The terminal sends *Service Request*, the E-USS/NB-SS sends *SERVICE ACCEPT* followed by *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE.
- h) The UE is switched off.

14.1.5 Acceptance criteria

- 1) After step d) the UE shall not deactivate the UICC or send SUSPEND UICC command.

14.2 UICC interface during eDRX for E-UTRAN – eDRX is not accepted by E-USS/NB-SS

14.2.1 Definition and applicability

In order to reduce power consumption when the UE uses extended idle mode DRX cycle, the UE may optionally deactivate the UICC during the extended idle mode DRX cycle.

14.2.2 Conformance requirement

In case the UICC does not support the UICC suspension mechanism, the PIN of the USIM is disabled and deactivation of UICC is authorized in EF_{AD}, the UE may optionally deactivate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]) during the extended idle mode DRX cycle.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.11;
- TS 24.301 [26], clauses 5.3.12.
- TS 23.401 [37], clause 5.13a
- 3GPP TS 31.101 [39] in clause 6A.1.

14.2.3 Test purpose

- 1) To verify that UE does not deactivate the UICC in case extended DRX cycle is not supported by the network.

14.2.4 Method of test

14.2.4.1 Initial conditions

The UE is configured to request the use of eDRX (in the ATTACH REQUEST and TRACKING AREA UPDATE messages).

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is installed into the Terminal with following exception:

EF_{AD} (Administrative Data)

- Logically:
- Normal operation + specific facilities;
 - Ciphering indicator feature disabled;
 - CSG Display Control: for every PLMN not included in EF_OCSGL, or for which a CSG display indicator tag is not present, all available CSGs can be displayed without any restriction;
 - ProSe services for Public Safety: the ME is not authorized for ProSe services for Public Safety usage without contacting the ProSe Function;
 - Extended DRX cycle: the ME is authorized to modify the polling interval and/or disable the UICC interface during extended DRX cycle;
 - Length of MNC in the IMSI: 3.

Coding:	B1	B2	B3	B4
Hex	01	00	08	03

The PIN of the USIM is disabled.

14.2.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including eDRX parameters:
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message where the eDRX parameters are not present. If *ATTACH REQUEST* in step b) above also contains T3324, the *ATTACH ACCEPT* message shall contain T3324 set to "deactivated". If *ATTACH REQUEST* in step b) does not contain T3324, the *ATTACH ACCEPT* message shall not contain T3324.
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB*, to the UE.
- e) E-USS/NB-SS transmits *Paging/Paging-NB* to the UE in a valid paging occasion as per normal DRX
- f) After receipt of *RRCConnectionRequest/RRCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* message to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- g) The terminal sends *Service Request*, the E-USS/NB-SS sends *SERVICE ACCEPT* followed by *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE
- h) The UE is switched off.

14.2.5 Acceptance criteria

- 1) After step d) the UE shall not deactivate the UICC.

14.3 UICC interface during eDRX for E-UTRAN – UICC deactivation during eDRX

14.3.1 Definition and applicability

In order to reduce power consumption when the UE uses extended idle mode DRX cycle, the UE may optionally deactivate the UICC during the extended idle mode DRX cycle.

In this case, the UE shall re-activate the UICC, re-initialize the USIM and take appropriate steps to verify that the same USIM is used, before the end of the extended idle mode DRX cycle or before any other transmission to the network

14.3.2 Conformance requirement

In case the UICC does not support the UICC suspension mechanism, the PIN of the USIM is disabled and deactivation of UICC is authorized in EF_{AD}, the UE may optionally deactivate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]) during the extended idle mode DRX cycle.

In this case, the UE shall re-activate the UICC (as specified in clause 6A.1 of 3GPP TS 31.101 [39]), re-initialize the USIM (as specified in clause 5.1.1 from [4]) and take appropriate steps to verify that the same USIM is used, before the end of the extended idle mode DRX cycle or before any other transmission to the network.

Verification shall include at least the check of the content of the following EFs: EF_{ICCID}, EF_{IMSI} and EF_{LOCI}, and/or EF_{PSLOCI} and/or EF_{EPSLOCI} (depending on which of these specific EFs containing LOCI the ME used prior to entering PSM).

Reference:

- 3GPP TS 31.102 [4], clause 5.1.11;
- TS 24.301 [26], clauses 5.3.12.
- TS 23.401 [37], clause 5.13a
- 3GPP TS 31.101 [39] in clause 6A.1.

14.3.3 Test purpose

- 1) To verify that UE does not deactivate the UICC in case the ME is not authorized to modify the polling interval and/or disable the UICC interface during extended DRX cycle in EF_{AD} in USIM.
- 2) To verify that UE when it leaves the PSM performs the following steps:
 - re-activates the UICC.
 - re-initializes the USIM
 - verifies the following EFs: EF_{ICCID}, EF_{IMSI} and EF_{EPSLOCI}.

14.3.4 Method of test

14.3.4.1 Initial conditions

The UE is configured to request the use of eDRX (in the ATTACH REQUEST and TRACKING AREA UPDATE messages).

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is installed into the Terminal with following exception:

EF_{AD} (Administrative Data)

- Logically:
- Normal operation + specific facilities;
 - Ciphering indicator feature disabled;
 - CSG Display Control: for every PLMN not included in EF_OCSGL, or for which a CSG display indicator tag is not present, all available CSGs can be displayed without any restriction;
 - ProSe services for Public Safety: the ME is not authorized for ProSe services for Public Safety usage without contacting the ProSe Function;
 - Extended DRX cycle: the ME is authorized to modify the polling interval and/or disable the UICC interface during extended DRX cycle;
 - Length of MNC in the IMSI: 3.

Coding:	B1	B2	B3	B4
Hex	01	00	08	03

The PIN of the USIM is disabled.

14.3.4.2 Procedure

- a) The UE is switched on.
- b) The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including eDRX parameters:
- c) The E-USS/NB-SS sends the *ATTACH ACCEPT* message containing eDRX set to eDRX_V and PTW set to PTW_V. If *ATTACH REQUEST* in step b) above also contains T3324, the *ATTACH ACCEPT* message shall contain T3324 set to "deactivated". If *ATTACH REQUEST* in step b) does not contain T3324, the *ATTACH ACCEPT* message shall not contain T3324.
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCCConnectionRelease/RRCCConnectionRelease-NB*, to the UE.
- e) The E-USS/NB-SS transmits *Paging/Paging-NB* to the UE using the S-TMSI in a valid paging occasion within the PTW of the paging Hyperframes as per Idle eDRX.
- f) After receipt of a *RRCCConnectionRequest/RRCCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCCConnectionSetup/RRCCConnectionSetup-NB* message to the UE, followed by *RRCCConnectionSetupComplete/RRCCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- g) The terminal sends *Service Request*, the E-USS/NB-SS sends *SERVICE ACCEPT* followed by *RRCCConnectionRelease/RRCCConnectionRelease-NB* to the UE.
- h) The UE is switched off.

14.3.5 Acceptance criteria

- 1) After step d) the UE the UE deactivates the UICC.
- 2) After step e) the UE shall re-activate the UICC, re-initialize the USIM and verify the following EFs: EF_{ICCID}, EF_{IMSI} and EF_{EPSLOC}

14.4 UICC interface during eDRX for E-UTRAN– SUSPEND UICC

14.4.1 Definition and applicability

In order to reduce power consumption when the UE uses extended idle mode DRX cycle, as defined in 3GPP TS 24.301 [26], in case the UICC supports the UICC suspension mechanism (SUSPEND UICC command), the ME may suspend the UICC during the extended idle mode DRX cycle. In this case, the ME shall resume the UICC successfully before the end of the extended idle mode DRX cycle or before any other transmission to the network.

14.4.2 Conformance requirement

In case the UICC supports the UICC suspension mechanism (SUSPEND UICC command), the ME may suspend the UICC during the extended idle mode DRX cycle. In this case, the ME shall resume the UICC successfully before the end of the extended idle mode DRX cycle or before any other transmission to the network.

Reference:

- 3GPP TS 31.102 [4], clause 5.1.11;
- TS 24.301 [26], clauses 5.3.12.
- TS 23.401 [37], clause 5.13a.
- 3GPP TS 31.101 [39] in clauses 6A.1 and 11.1.22.

14.4.3 Test purpose

- 1) To verify that UE does not send SUSPEND UICC command to the UICC in case the UICC does not indicates the support of SUSPEND UICC command in EF_{UMPC} during the extended idle mode DRX cycle
- 2) To verify that UE sends SUSPEND UICC command to the UICC in case the UICC indicates the support of SUSPEND UICC command in EF_{UMPC} during the extended idle mode DRX cycle.
- 3) To verify that UE resumes the UICC before the end of the extended idle mode DRX cycle or before any other transmission to the network.

14.4.4 Method of test

14.4.4.1 Initial conditions

The UE is configured to request the use of eDRX (in the ATTACH REQUEST and TRACKING AREA UPDATE messages).

The E-USS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The NB-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default E-UTRAN UICC is used with the following exceptions:

EF_{UMPC} (UICC Maximum Power Consumption)

Logically:

UICC maximum power consumption: 60 mA
 Operator defined time out (T_OP): 5 seconds
 Additional information: UICC does not require increased idle current
 UICC supports the UICC suspension procedure
 Byte 4 and byte 5: RFU

Byte:	B1	B2	B3	B4	B5
Coding:	3C	05	02	00	00

EF_{AD} (Administrative Data)

Logically: Normal operation + specific facilities;
 Ciphering indicator feature disabled;
 CSG Display Control: for every PLMN not included in EF_OCSGL, or for which a CSG display indicator tag is not present, all available CSGs can be displayed without any restriction;
 ProSe services for Public Safety: the ME is not authorized for ProSe services for Public Safety usage without contacting the ProSe Function;
 Extended DRX cycle: the ME is authorized to modify the polling interval and/or disable the UICC interface during extended DRX cycle;
 Length of MNC in the IMSI: 3.

Coding:	B1	B2	B3	B4
Hex	01	00	08	03

The PIN of the USIM is enabled and verified.

14.4.4.2 Procedure

- The UE is switched on.
- The UE requests RRC Connection and transmits an *ATTACH REQUEST* message to the E-USS/NB-SS including eDRX parameters:
- The E-USS/NB-SS sends the *ATTACH ACCEPT* message containing eDRX set to eDRX_V and PTW set to PTW_V. If *ATTACH REQUEST* in step b) above also contains T3324, the *ATTACH ACCEPT* message shall contain T3324 set to "deactivated". If *ATTACH REQUEST* in step b) does not contain T3324, the *ATTACH ACCEPT* message shall not contain T3324.
- After receipt of the *AttachComplete* during registration from the UE, the E-USS/NB-SS sends *RRCConnectionRelease/RRCConnectionRelease-NB*, to the UE.
- The UE sends SUSPEND UICC command to the UICC indicating "Minimum duration of the suspension proposed by the terminal" and the "Maximum duration of the suspension proposed by the terminal".
- The UICC returns Maximum duration of the "suspension negotiated by the UICC" = "Minimum duration of the suspension proposed by the terminal", Resume token and SW 9000.
- The E-USS/NB-SS transmits *Paging/Paging-NB* to the UE using the S-TMSI in a valid paging occasion within the PTW of the paging Hyperframes as per Idle eDRX.
- After receipt of *RRCConnectionRequest/RRCConnectionRequest-NB* message from the UE, the E-USS/NB-SS sends *RRCConnectionSetup/RRCConnectionSetup-NB* message to the UE, followed by *RRCConnectionSetupComplete/RRCConnectionSetupComplete-NB* sent by the UE to the E-USS/NB-SS.
- The terminal sends *Service Request*, the E-USS/NB-SS sends *SERVICE ACCEPT* followed by *RRCConnectionRelease/RRCConnectionRelease-NB* to the UE.
- The UE is switched off.

14.4.5 Acceptance criteria

- 1) After step f) the UE deactivates the UICC as specified in 3GPP TS 31.101 [39].
- 2) After step g) the UE resumes the UICC.

15 Authentication procedure and NAS security context handling for 5G

15.1 Authentication procedure for EAP-AKA'

15.1.1 Authentication procedure for EAP-AKA' - Authentication is successful

15.1.1.1 Definition and applicability

The purpose of the primary authentication and key agreement procedure is to enable mutual authentication between the UE and the network and to provide keying material that can be used between the UE and network in subsequent security procedures. The UE and the AMF shall support the EAP based primary authentication and key agreement procedure.

In order to initiate the EAP based primary authentication and key agreement procedure using EAP-AKA', the AUSF shall send an EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

The EF_{5GS3GPPNSC} contains the 5GS 3GPP access NAS security context as defined in 3GPP TS 24.501 [42], consisting of K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values. This file shall contain one record.

The EF_{5GAUTHKEYS} contains K_{AUSF} and K_{SEAF} that are generated on the ME using CK and IK as part of AKA procedures as described in 3GPP TS 33.501 [41].

15.1.1.2 Conformance requirement

- 1) The UE shall support the EAP based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in EAP message IE with EAP-request/AKA'-challenge within the *AUTHENTICATION REQUEST* message to the USIM.
- 3) The ME shall return the EAP message IE with EAP-response/AKA'-challenge in *AUTHENTICATION RESPONSE* message.
- 4) As a result of successful authentication procedure and upon receipt of the EAP Success message, the 5G NAS security context parameters shall be stored on the USIM if the corresponding file is present on the USIM when entering state 5GMM-DEREGISTERED.
- 5) If service n°122 is "available", the ME shall store K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values in EF_{5GS3GPPNSC} on the USIM.
- 6) If service n°123 is "available", the ME shall store the K_{AUSF} and K_{SEAF} in EF_{5GAUTHKEYS} on the USIM.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.3, 4.4.11.4 and 4.4.11.6;
- 3GPP TS 33.501 [41], clause 6.1.3.1;
- 3GPP TS 24.501 [42], clause 5.4.1.2 and Annex C.

15.1.1.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in EAP-request/AKA'-challenge within EAP message IE to the USIM.
- 2) To verify that the ME returns the EAP message IE with EAP-response/AKA'-challenge in *AUTHENTICATION RESPONSE* message indicating the response calculated in the USIM (RES).
- 3) To verify that the ME stores 5G NAS security context parameters, consisting of K_{AMF} with the associated key set identifier in EF_{5GS3GPPNSC} on the USIM if service n°122 is "available".
- 4) To verify that the ME stores the K_{AUSF} and K_{SEAF} in EF_{5GAUTHKEYS} on the USIM if service n°123 is "available".

15.1.1.4 Method of test

15.1.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used and the UICC is installed into the ME and the UE is powered on.

15.1.1.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- c) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the EAP-AKA' authentication procedure and sends EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message and it uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

EAP message: EAP-request/AKA'-challenge

- d) Using the EAP-request/AKA'-challenge data received in *AUTHENTICATION REQUEST* message the ME passes the RAND and AUTN to the USIM.
- e) The UE shall return the EAP message IE with EAP-response/AKA'-challenge in *AUTHENTICATION RESPONSE* message.
- f) After reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends EAP-success in *SECURITY MODE COMMAND* message, the UE sends a *SECURITY MODE COMPLETE* message.
- g) The NG-SS sends a *REGISTRATION ACCEPT* message.

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01

- h) The UE sends a *REGISTRATION COMPLETE* message.
- i) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.1.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST}, EF_{5GS3GPPNSC} and EF_{5GAUTHKEYS}.
- 2) During step c) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step d) the ME forwards the RAND and AUTN received in EAP message IE with EAP-request/AKA'-challenge message to the USIM.
- 4) In step e) the ME shall send *AUTHENTICATION RESPONSE* message with EAP message IE with EAP-response/AKA'-challenge containing the response calculated in the USIM (RES):
 - Authentication response message identity: '0101 0111'
 - Authentication response parameter: 4 – 16 octets RES value calculated according to 3GPP TS 24.501 [42]
- 5) In step f) the UE shall send *SECURITY MODE COMPLETE* message.
- 6) After step f) the ME updates EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, value not checked

K_{SEAF}: 32 bytes, value not checked

Coding:	B1	B2	B3	Bx	Bx+1	Bx+2	Bx+3	..	Bxx
Hex	80	L1	Xx	..	81	L2	xx	..	xx

- 7) After step i) the ME updates EF_{5GS3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context:

ngKSI: 00

K_{AMF}: 32 bytes, value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	XX	80	01	00	81	xx	xx	...	xx

15.1A.1 Authentication procedure for EAP-AKA' - Authentication is Successful

15.1A.1.1 Definition and applicability

The purpose of the primary authentication and key agreement procedure is to enable mutual authentication between the UE and the network and to provide keying material that can be used between the UE and network in subsequent security procedures. The UE and the AMF shall support the EAP based primary authentication and key agreement procedure.

In order to initiate the EAP based primary authentication and key agreement procedure using EAP-AKA', the AUSF shall send an EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

The EF_{5GS3GPPNSC} contains the 5GS 3GPP access NAS security context as defined in 3GPP TS 24.501 [42], consisting of K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values. This file shall contain one record.

The EF_{5GAUTHKEYS} contains K_{AUSF} and K_{SEAF} that are generated on the ME using CK and IK as part of AKA procedures as described in 3GPP TS 33.501 [41]. If service n°133 is "available" in EF_{UST}, the EF_{5GAUTHKEYS} also contains SOR counter and UE parameter update counter associated with the key K_{AUSF} as described in 3GPP TS 33.501 [41] and 3GPP TS 31.102 [4].

15.1A.1.2 Conformance requirement

- 1) The UE shall support the EAP based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in EAP message IE with EAP-request/AKA'-challenge within the *AUTHENTICATION REQUEST* message to the USIM.
- 3) The ME shall return the EAP message IE with EAP-response/AKA'-challenge in *AUTHENTICATION RESPONSE* message.
- 4) As a result of successful authentication procedure and upon receipt of the EAP Success message, the 5G NAS security context parameters shall be stored on the USIM if the corresponding file is present on the USIM when entering state 5GMM-DEREGISTERED.
- 5) With service n°122 "available", the ME shall store K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values in EF_{5GS3GPPNSC} on the USIM.
- 6) With service n°123 "available" and service n°133 "available" the ME shall store the K_{AUSF}, K_{SEAF} for 3GPP access, K_{SEAF} for non-3GPP access, SOR counter and UE parameter update counter in the EF_{5GAUTHKEYS} on the USIM.

Reference:

- TS 31.102 [4], clauses 4.4.11.3, 4.4.11.4 and 4.4.11.6;
- TS 33.501 [41], clause 6.1.3.1;
- TS 24.501 [42], clause 5.4.1.2 and Annex C.

15.1A.1.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in EAP-request/AKA'-challenge within EAP message IE to the USIM.
- 2) To verify that the ME returns the EAP message IE with EAP-response/AKA'-challenge in *AUTHENTICATION RESPONSE* message indicating the response calculated in the USIM (RES).

- 3) To verify that the ME stores 5G NAS security context parameters, consisting of K_{AMF} with the associated key set identifier in $EF_{5GS3GPPNSC}$ on the USIM where service n°122 is "available".
- 4) To verify that the ME stores the K_{AUSF} , K_{SEAF} for 3GPP access, K_{SEAF} for non-3GPP access, SOR counter and UE parameter update in the $EF_{5GAUTHKEYS}$ on the USIM where service n°123 is "available" and service n°133 is "available".

15.1A.1.4 Method of test

15.1A.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The 5G-NR UICC - support of Rel-16 features is used and the UICC is installed into the ME and the UE is powered on.

15.1A.1.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- c) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the EAP-AKA' authentication procedure and sends EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message and it uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

EAP message: EAP-request/AKA'-challenge

- d) Using the EAP-request/AKA'-challenge data received in *AUTHENTICATION REQUEST* message the ME passes the RAND and AUTN to the USIM.
- e) The UE shall return the EAP message IE with EAP-response/AKA'-challenge in *AUTHENTICATION RESPONSE* message.
- f) After reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends EAP-success in *SECURITY MODE COMMAND* message, the UE sends a *SECURITY MODE COMPLETE* message.
- g) The NG-SS sends a *REGISTRATION ACCEPT* message.
5G-GUTI:24408300010266436587
TAI: 42 34 80 00 00 01
- h) The UE sends a *REGISTRATION COMPLETE* message.
- i) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.1A.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST} , $EF_{5GS3GPPNSC}$ and $EF_{5GAUTHKEYS}$.
- 2) During step c) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.

- 3) In step d) the ME forwards the RAND and AUTN received in EAP message IE with EAP-request/AKA'-challenge message to the USIM.
- 4) In step e) the ME shall send *AUTHENTICATION RESPONSE* message with EAP message IE with EAP-response/AKA'-challenge containing the response calculated in the USIM (RES):
 - Authentication response message identity: '0101 0111'
 - Authentication response parameter: 4 – 16 octets RES value calculated according to 3GPP TS 24.501 [42]
- 5) In step f) the UE shall send *SECURITY MODE COMPLETE* message.
- 6) After step f) the ME updates EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, value not checked

K_{SEAF} for 3GPP access: 32 bytes, value not checked

K_{SEAF} for non-3GPP access: 32 bytes, all values set to 'FF'

SOR counter: 2 bytes, value not checked

UE parameter update counter: 2 bytes, value not checked

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	xx	xx
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	FF	FF	83	02	xx	xx
	B107	B108	B109	B110				
	84	02	xx	xx				

- 7) After step i) the ME updates EF_{5GS3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context:

ngKSI: 00

K_{AMF}: 32 bytes, value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity and encryption algorithms: any value

Identifiers of selected EPS NAS integrity and encryption algorithms for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

15.1.2 Authentication procedure for EAP-AKA' – Authentication is successful - GSM UICC

15.1.2.1 Definition and applicability

The purpose of the primary authentication and key agreement procedure is to enable mutual authentication between the UE and the network and to provide keying material that can be used between the UE and network in subsequent security procedures. The UE and the AMF shall support the EAP based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

During the authentication procedure if the USIM computes a Kc (i.e. GPRS Kc) from CK and IK using conversion function c3 as described in 3GPP TS 33.102 [45], and sends it to the ME, then the ME shall ignore such GPRS Kc and not store the GPRS Kc on USIM or in ME.

15.1.2.2 Conformance requirement

- 1) The ME shall ignore the GPRS Kc and not store the GPRS Kc on USIM or in ME if the USIM computes a Kc (i.e. GPRS Kc) from CK and IK using conversion function c3 as described in TS 33.102 [45].
- 2) If Service n°122 and Service n°123 are not available on the USIM, the 5GS 3GPP access NAS security context parameters and the 5G authentication keys shall be stored in the non-volatile memory of the ME.

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.1;
- 3GPP TS 24.501 [42], clause 5.4.1.2 and Annex C.

15.1.2.3 Test purpose

- 1) To verify that the ME will ignore the GPRS Kc and will not store the GPRS Kc on USIM or in ME when the USIM computes a Kc (i.e. GPRS Kc) from CK and IK.
- 2) To verify that the ME stores the 5GS 3GPP access NAS security context parameters and the 5G authentication keys inside the ME non-volatile memory when Service n°122 and Service n°123 are not available on the USIM.

15.1.2.4 Method of test

15.1.2.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default UICC is used and installed into the ME.

15.1.2.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to NG-SS. Further NG-SS responds with REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- c) The UE is switched on.

- d) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- e) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the EAP-AKA' authentication procedure and sends EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message, uses:
 - ngKSI:
 - NAS key set identifier: '000'
 - TSC: '0'
 - EAP message: EAP-request/AKA'-challenge
- f) Using the 5G authentication challenge data received in *AUTHENTICATION REQUEST* message the ME passes the RAND and AUTN to the USIM, the USIM calculates the response parameter K_C (i.e. GPRS Kc) from CK and IK using conversion function c3.
- g) After the reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message. The UE sends a *SECURITY MODE COMPLETE* message.
- h) The NG-SS sends a *REGISTRATION ACCEPT* message.
 - 5G-GUTI:24408300010266436587
- i) The UE sends a *REGISTRATION COMPLETE* message.
- j) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure, then the NG-SS sends the *RRCRelease* message.
- k) The UE is switched on.
- l) The UE sends *REGISTRATION REQUEST* message in protected mode using the last calculated K_{AMF} , indicates the 5GS mobile identity information element type "5G-GUTI"
- m) The NG-SS sends *REGISTRATION ACCEPT* to the UE.
- n) The UE sends a *REGISTRATION COMPLETE* message.
- o) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.1.2.5 Acceptance criteria

- 1) After step c) the ME shall read EF_{UST}
- 2) During step e) the UE shall indicate in the *REGISTRATION REQUEST* that no key is available for the NAS key set identifier.
- 3) In step f) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) In step g) the ME shall send *AUTHENTICATION RESPONSE* message contains:
 - Authentication response message identity: '0101 0111'
 - Authentication response parameter: 16 octets RES value calculated according to 3GPP TS 24.501 [42]
- 5) During steps g) to i) the ME does not store GPRS Kc on the USIM.
- 6) In step l) the UE shall indicate in the protected mode *REGISTRATION REQUEST* that NAS key set identifier is set to '000' and TSC is set to '0' and uses the 5GS mobile identity information element type "5G-GUTI" with value:
 - 5G-GUTI:24408300010266436587.

15.1.3 Authentication procedure for EAP-AKA' – AUTN fails on the USIM

15.1.3.1 Definition and applicability

The purpose of the primary authentication and key agreement procedure is to enable mutual authentication between the UE and the network and to provide keying material that can be used between the UE and network in subsequent security procedures. The UE and the AMF shall support the EAP based primary authentication and key agreement procedure.

At receipt of the RAND and AUTN, the USIM shall verify the freshness of the AV' by checking whether AUTN can be accepted as described in 3GPP TS 33.102 [45]. If so, the USIM computes a response RES. The USIM shall return RES, CK, IK to the ME. The ME shall derive CK' and IK'. If the verification of the AUTN fails on the USIM, then the USIM and ME shall proceed as described in clause 6.1.3.3 in 3GPP TS 33.501 [41].

15.1.3.2 Conformance requirement

- 1) The ME shall forward the RAND and AUTN received in the EAP message IE with EAP-request/AKA'-challenge in the *AUTHENTICATION REQUEST* message to the USIM.
- 2) If the verification of the AUTN fails on the USIM, then the USIM and ME shall proceed as described in clause 6.1.3.3 in 3GPP TS 33.501 [41].
- 3) The ME shall return the EAP-Response/AKA-Synchronization-Failure, when the sequence number in the AUTN parameter is incorrect as described in clause 9.6 of RFC 4187 [47].

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.1 and 6.1.3.3;
- 3GPP TS 24.501 [42], clauses 5.4.1.2.2.1.
- RFC 4187 [47], clause 9.6.

15.1.3.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in EAP-request/AKA'-challenge message to the USIM.
- 2) To verify that the ME returns the EAP-Response/AKA-Synchronization-Failure if the verification of AUTN failed on the USIM due to a synchronisation failure.

15.1.3.4 Method of test

15.1.3.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used and installed into the ME and the UE is powered on.

15.1.3.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.

- c) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the EAP-AKA' authentication procedure and sends EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message contains:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

EAP message: EAP-request/AKA'-challenge

- d) Using the EAP-request/AKA'-challenge data received in *AUTHENTICATION REQUEST* message the ME pass the RAND and AUTN to the USIM and starts the timer T3520.
- e) The UICC returns AUTS parameter to the ME indicating that the verification of AUTN failed due to a synchronisation failure.
- f) The UE transmits the *AUTHENTICATION RESPONSE* message including the EAP-response/AKA'-synchronization-failure message and stops the timer T3520, the NG-SS sends an *AUTHENTICATION REQUEST* message.
- g) After the reception of *AUTHENTICATION REQUEST* message from the NG-SS, the ME forwards the received RAND, AUTN to the UICC.
- h) After reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message, the UE sends a *SECURITY MODE COMPLETE* message
- i) Upon reception of *REGISTRATION ACCEPT* message with a new 5G-GUTI, the UE sends a *REGISTRATION COMPLETE* message.

15.1.3.5 Acceptance criteria

1. In step d) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
2. In step f) the UE sends *AUTHENTICATION RESPONSE* message, including the AT AUTS attribute.
3. After step h) ME shall send *AUTHENTICATION RESPONSE* message contains the response calculated in the USIM (RES).

15.1.4 Authentication procedure for EAP-AKA' - after SUPI is changed

15.1.4.1 Definition and applicability

The purpose of the primary authentication and key agreement procedure is to enable mutual authentication between the UE and the network and to provide keying material that can be used between the UE and network in subsequent security procedures. The UE and the AMF shall support the EAP based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

15.1.4.2 Conformance requirement

- 1) The UE shall support the EAP based primary authentication and key agreement procedure.
- 2) The 5G NAS security context parameters shall be stored on the USIM or in a non-volatile memory in the ME together with the SUPI from the USIM.

3) The UE shall delete the 5GMM parameters if the SUPI from the USIM does not match the SUPI stored in the non-volatile memory.

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.1;
- 3GPP TS 24.501 [42], clauses 5.4.1.2 and Annex C.

15.1.4.3 Test purpose

- 1) To verify that the UE generates the 5G NAS security context parameters and stores them inside the non-volatile memory in the ME together with the SUPI from the USIM.
- 2) To verify that the UE rejects the SECURITY MODE COMMAND with the existing 5G NAS security context parameters if the SUPI is changed.

15.1.4.4 Method of test

15.1.4.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exception and installed into the ME.

EF_{usr} (USIM Service Table)

Logically:

5GS Mobility Management Information not available
5G Security Parameters not available

Byte:	B1	...	B16
Binary:	...		xxx0 100x

15.1.4.4.2 Procedure

- a) Bring up Cell A and the UE is switched on with default IMSI.
- b) The UE sends REGISTRATION REQUEST to NG-SS. Further NG-SS responds with REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- c) The UE is switched on, with IMSI set as 246081685533963.
- d) The UE sends REGISTRATION REQUEST to NG-SS. Further NG-SS responds REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- e) The UE is switched on with default IMSI.
- f) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- g) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the EAP-AKA' authentication procedure and sends EAP message IE with EAP-request/AKA'-challenge message in the *AUTHENTICATION REQUEST* message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

EAP message: EAP-request/AKA'-challenge

h) After receipt of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message, then the UE sends a *SECURITY MODE COMPLETE* message.

i) The NG-SS sends a *REGISTRATION ACCEPT* message.

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01

j) The UE sends a *REGISTRATION COMPLETE* message.

k) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

l) Change the UICC configuration (by setting the IMSI to 246081685533963), then switch the UE on.

m) After the receipt of *REGISTRATION REQUEST* message from the UE during registration, the NG-SS performs *AUTHENTICATION* procedure and transmits a *SECURITY MODE COMMAND* message using the last calculated K_{AMF} (at step 'g') indicated by the ngKSI to activate NAS security.

n) The UE is switched off.

15.1.4.5 Acceptance criteria

- 1) In step h) the UE sends a *SECURITY MODE COMPLETE* message.
- 2) In step m) the UE shall not use the 5G-GUTI or the Last visited registered TAI parameters in the *REGISTRATION REQUEST* message, instead it shall use SUCI as 5GS mobile identity IE.
- 3) During step m) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 4) After step m) and before step n) the UE sends *SECURITY MODE REJECT* message.

15.2 Authentication procedure for 5G AKA

15.2.1 Authentication procedure for 5G AKA - Authentication is successful

15.2.1.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

The $EF_{5GS3GPPNSC}$ contains the 5GS 3GPP access NAS security context as defined in 3GPP TS 24.501 [42], consisting of K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values. This file shall contain one record.

The $EF_{5GAUTHKEYS}$ contains K_{AUSF} and K_{SEAF} that are generated on the ME using CK and IK as part of AKA procedures as described in TS 33.501[41]

15.2.1.2 Conformance requirement

- 1) The UE shall support the 5G AKA based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 3) The ME shall compute RES* from RES according to Annex A.4 TS 33.501[41] and return it in *AUTHENTICATION RESPONSE* message.
- 4) As a result of successful authentication procedure if service n°122 is "available", the 5G NAS security context parameters shall be stored on the USIM.
- 5) If service n°123 is "available", the ME shall store the K_{AUSF} and K_{SEAF} in EF_{5GAUTHKEYS} on the USIM.

Reference:

- TS 31.102 [4], clauses 4.4.11.3, 4.4.11.4 and 4.4.11.6;
- 3GPP TS 33.501 [41], clause 6.1.3.2;
- 3GPP TS 24.501 [42], clause 5.4.1.3 and Annex C.

15.2.1.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in 5G authentication challenge data within *AUTHENTICATION REQUEST* message to the USIM.
- 2) To verify that the ME sends *AUTHENTICATION RESPONSE* message contains the calculated RES* in response to *AUTHENTICATION REQUEST* message.
- 3) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier in EF_{5GS3GPPNSC} on the USIM if service n°122 is "available".
- 4) To verify that the ME stores the K_{AUSF} and K_{SEAF} in EF_{5GAUTHKEYS} on the USIM if service n°123 is "available".

15.2.1.4 Method of test

15.2.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is and the UICC is installed into the ME.

15.2.1.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- c) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the *AUTHENTICATION REQUEST* message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- d) Using the 5G authentication challenge data received in *AUTHENTICATION REQUEST* message the ME pass the RAND and AUTN to the USIM.
- e) Upon reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message. The UE sends a *SECURITY MODE COMPLETE* message.
- f) The NG-SS sends a *REGISTRATION ACCEPT* message.
5G-GUTI:24408300010266436587
TAI: 42 34 80 00 00 01
- g) The UE sends a *REGISTRATION COMPLETE* message.
- h) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.2.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST}, EF_{5GS3GPPNSC} and EF_{5GAUTHKEYS}.
- 2) During step c) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step d) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) During step e) the UE sends an *AUTHENTICATION RESPONSE* message contains:
Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42]
- 5) In step e) the UE shall send *SECURITY MODE COMPLETE* message.
- 6) After step e) the ME updates EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: value not checked

K_{SEAF}: value not checked

Coding:	B1	B2	B3	Bx	Bx+1	Bx+2	Bx+3	..	Bxx
Hex	80	L1	xx	..	81	L2	xx	..	xx

- 7) After step h) the ME updates EF_{5GS3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context:

ngKSI: 00

K_{AMF}: value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

15.2A.1 Authentication procedure for 5G AKA - Authentication is successful

15.2A.1.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

The $EF_{5GS3GPPNSC}$ contains the 5GS 3GPP access NAS security context as defined in 3GPP TS 24.501 [42], consisting of K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values. This file shall contain one record.

The $EF_{5GAUTHKEYS}$ contains K_{AUSF} and K_{SEAF} that are generated on the ME using CK and IK as part of AKA procedures as described in 3GPP TS 33.501 [41]. If service n°133 is "available" in EF_{FUST} , the $EF_{5GAUTHKEYS}$ also contains SOR counter and UE parameter update counter associated with the key K_{AUSF} as described in 3GPP TS 33.501 [41] and 3GPP TS 31.102 [4].

15.2A.1.2 Conformance requirement

- 1) The UE shall support the 5G AKA based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 3) The ME shall compute RES* from RES according to 3GPP TS 33.501 [41], Annex A.4 and return it in *AUTHENTICATION RESPONSE* message.
- 4) As a result of successful authentication procedure the 5G NAS security context parameters shall be stored on the USIM where service n°122 is "available".
- 5) The ME shall store the K_{AUSF} , K_{SEAF} for 3GPP access, K_{SEAF} for non-3GPP access, SOR counter and UE parameter update counter in the $EF_{5GAUTHKEYS}$ on the USIM where service n°123 and service n°133 are "available".

Reference:

- TS 31.102 [4], clauses 4.4.11.3, 4.4.11.4 and 4.4.11.6;
- TS 33.501 [41], clause 6.1.3.2;
- TS 24.501 [42], clause 5.4.1.3 and Annex C.

15.2A.1.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in 5G authentication challenge data within *AUTHENTICATION REQUEST* message to the USIM.

- 2) To verify that the ME sends *AUTHENTICATION RESPONSE* message contains the calculated RES* in response to *AUTHENTICATION REQUEST* message.
- 3) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier in EF_{5GS3GPPNSC} on the USIM where service n°122 is "available".
- 4) To verify that the ME stores the K_{AUSF}, K_{SEAF} for 3GPP access, K_{SEAF} for non-3GPP access, SOR counter and UE parameter update in EF_{5GAUTHKEYS} on the USIM where service n°123 is "available" and service n°133 is "available".

15.2A.1.4 Method of test

15.2A.1.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The 5G-NR UICC - support of Rel-16 features is used and the UICC is installed into the ME.

15.2A.1.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- c) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the *AUTHENTICATION REQUEST* message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- d) Using the 5G authentication challenge data received in *AUTHENTICATION REQUEST* message the ME pass the RAND and AUTN to the USIM.
- e) Upon reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message. The UE sends a *SECURITY MODE COMPLETE* message.
- f) The NG-SS sends a *REGISTRATION ACCEPT* message.
5G-GUTI:24408300010266436587
TAI: 42 34 80 00 00 01
- g) The UE sends a *REGISTRATION COMPLETE* message.
- h) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.2A.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST}, EF_{5GS3GPPNSC} and EF_{5GAUTHKEYS}.

- 2) During step c) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step d) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) During step e) the UE sends an *AUTHENTICATION RESPONSE* message contains:

Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42]
- 5) In step e) the UE shall send *SECURITY MODE COMPLETE* message.
- 6) After step e) the ME updates the EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, value not checked

K_{SEAF} for 3GPP access: 32 bytes, value not checked

K_{SEAF} for non-3GPP access: 32 bytes, all values set to 'FF'

SOR counter: 2 bytes, value not checked

UE parameter update counter: 2 bytes, value not checked

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	xx	xx
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	FF	FF	83	02	xx	xx
	B107	B108	B109	B110				
	84	02	xx	xx				

- 7) After step h) the ME updates EF_{5GS3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context:

ngKSI: 00

K_{AMF}: value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

15.2A.2 Authentication procedure for 5G AKA – Authentication is successful - GSM UICC

15.2A.2.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

During the authentication procedure if the USIM computes a Kc (i.e. GPRS Kc) from CK and IK using conversion function c3 as described in 3GPP TS 33.102 [45], and sends it to the ME, then the ME shall ignore such GPRS Kc and not store the GPRS Kc on USIM or in ME.

15.2A.2.2 Conformance requirement

- 1) The ME shall ignore the GPRS Kc and not store the GPRS Kc on USIM or in ME if the USIM computes a Kc (i.e. GPRS Kc) from CK and IK using conversion function c3 as described in 3GPP TS 33.102 [45].
- 2) If Service n°122 and Service n°123 are not available on the USIM, the 5GS 3GPP access NAS security context parameters and the 5G authentication keys shall be stored in the non-volatile memory of the ME.

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.1;
- 3GPP TS 24.501 [42], clause 5.4.1.2 and Annex C.

15.2A.2.3 Test purpose

- 1) To verify that the ME will ignore the GPRS Kc and will not store the GPRS Kc on USIM or in ME when the USIM computes a Kc (i.e. GPRS Kc) from CK and IK.
- 2) To verify that the ME stores the 5GS 3GPP access NAS security context parameters, the 5G authentication keys, SOR counter and UE parameter update inside the ME non-volatile memory when Service n°122 and Service n°123 and Service n°133 are not available on the USIM.

15.2A.2.4 Method of test

15.2A.2.4.1 Initial conditions

The NR-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default UICC is used and installed into the ME.

15.2A.2.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) The UE sends REGISTRATION REQUEST to NG-SS. Further NG-SS responds with REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- c) The UE is switched on.

- d) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- e) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the 5G AKA authentication procedure and sends 5G-AKA-Challenge message in the *AUTHENTICATION REQUEST* message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- f) Using the 5G authentication challenge data received in *AUTHENTICATION REQUEST* message the ME pass the RAND and AUTN to the USIM, the USIM calculates the response parameter KC (i.e. GPRS Kc) from CK and IK using conversion function c3.
- g) Upon reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message. The UE sends a *SECURITY MODE COMPLETE* message.
- h) The NG-SS sends a *REGISTRATION ACCEPT* message contains:
5G-GUTI:24408300010266436587
TAI: 42 34 80 00 00 01
- i) The UE sends a *REGISTRATION COMPLETE* message.
- j) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure, then the NG-SS sends the *RRCRelease* message.
- k) The UE is switched on.
- l) The UE sends *REGISTRATION REQUEST* message in protected mode using the last calculated K_{AMF} , indicates the 5GS mobile identity information element type "5G-GUTI"
- m) The NG-SS sends *REGISTRATION ACCEPT* to the UE with:
5G-GUTI:24408300010266436555
TAI: 42 34 80 00 00 01
- n) The UE sends a *REGISTRATION COMPLETE* message.
- o) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.2A.2.5 Acceptance criteria

- 1) After step c) the ME shall read EF_{USR} .
- 2) During step e) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step f) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) During step g) the UE sends an *AUTHENTICATION RESPONSE* message contains:
Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42].
- 5) During steps g) to i) the ME does not store GPRS Kc, SOR counter, or UE parameter update counter on the USIM.

- 6) In step 1) the UE shall indicate in protected mode the *REGISTRATION REQUEST* that NAS key set identifier is set to '000' and TSC is set to '0' and uses the 5GS mobile identity information element type "5G-GUTI" with value:

5G-GUTI:24408300010266436587.

15.2.2 Authentication procedure for 5G AKA – Authentication is successful - GSM UICC

15.2.2.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

During the authentication procedure if the USIM computes a Kc (i.e. GPRS Kc) from CK and IK using conversion function c3 as described in TS 33.102 [45], and sends it to the ME, then the ME shall ignore such GPRS Kc and not store the GPRS Kc on USIM or in ME.

15.2.2.2 Conformance requirement

- 1) The ME shall ignore the GPRS Kc and not store the GPRS Kc on USIM or in ME if the USIM computes a Kc (i.e. GPRS Kc) from CK and IK using conversion function c3 as described in TS 33.102 [45].
- 2) If Service n°122 and Service n°123 are not available on the USIM, the 5GS 3GPP access NAS security context parameters and the 5G authentication keys shall be stored in the non-volatile memory of the ME.

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.1;
- 3GPP TS 24.501 [42], clause 5.4.1.2 and Annex C.

15.2.2.3 Test purpose

- 1) To verify that the ME will ignore the GPRS Kc and will not store the GPRS Kc on USIM or in ME when the USIM computes a Kc (i.e. GPRS Kc) from CK and IK.
- 2) To verify that the ME stores the 5GS 3GPP access NAS security context parameters and the 5G authentication keys inside the ME non-volatile memory when Service n°122 and Service n°123 are not available on the USIM.

15.2.2.4 Method of test

15.2.2.4.1 Initial conditions

The NR-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default UICC is used and installed into the ME.

15.2.2.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.

- b) The UE sends *REGISTRATION REQUEST* to NG-SS. Further NG-SS responds with *REGISTRATION REJECT* (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- c) The UE is switched on.
- d) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- e) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the 5G AKA authentication procedure and sends 5G-AKA-Challenge message in the *AUTHENTICATION REQUEST* message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- f) Using the 5G authentication challenge data received in *AUTHENTICATION REQUEST* message the ME pass the RAND and AUTN to the USIM, the USIM calculates the response parameter KC (i.e. GPRS Kc) from CK and IK using conversion function c3.
- g) Upon reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message. The UE sends a *SECURITY MODE COMPLETE* message.
- h) The NG-SS sends a *REGISTRATION ACCEPT* message contains:

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01
- i) The UE sends a *REGISTRATION COMPLETE* message.
- j) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure, then the NG-SS sends the *RRCRelease* message.
- k) he UE is switched on.
- l) The UE sends *REGISTRATION REQUEST* message in protected mode using the last calculated K_{AMF} , indicates the 5GS mobile identity information element type "5G-GUTI"
- m) The NG-SS sends *REGISTRATION ACCEPT* to the UE with:

5G-GUTI:24408300010266436555

TAI: 42 34 80 00 00 01
- n) The UE sends a *REGISTRATION COMPLETE* message.
- o) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.2.2.5 Acceptance criteria

- 1) After step c) the ME shall read EF_{UST} .
- 2) During step e) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step f) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) During step g) the UE sends an *AUTHENTICATION RESPONSE* message contains:

Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42].

- 5) During steps g) to i) the ME does not store GPRS Kc on the USIM.
- 6) In step l) the UE shall indicate in protected mode the *REGISTRATION REQUEST* that NAS key set identifier is set to '000' and TSC is set to '0' and uses the 5GS mobile identity information element type "5G-GUTI" with value:

5G-GUTI:24408300010266436587.

15.2.3 Authentication procedure 5G AKA – AUTN fails on the USIM

15.2.3.1 Definition and applicability

The purpose of the primary authentication and key agreement procedure is to enable mutual authentication between the UE and the network and to provide keying material that can be used between the UE and network in subsequent security procedures. The UE and the AMF shall support the EAP based primary authentication and key agreement procedure.

At receipt of the RAND and AUTN, the USIM shall verify the freshness of the AV' by checking whether AUTN can be accepted as described in TS 33.102 [45]. If so, the USIM computes a response RES. The USIM shall return RES, CK, IK to the ME. If the verification of the AUTN fails on the USIM, then the USIM and ME shall proceed as described in clause 6.1.3. 3 in 3GPP TS 33.501 [41].

15.2.3.2 Conformance requirement

- 1) The ME shall forward the RAND and AUTN received in 5G authentication challenge data within *AUTHENTICATION REQUEST* message.
- 2) If the verification of the AUTN fails on the USIM, then the USIM and ME shall proceed as described in clause 6.1.3. 3 in 3GPP TS 33.501 [41].
- 3) The ME shall return Synchronization-Failure of AUTH in the *AUTHENTICATION FAILURE* message.

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.2 and 6.1.3.3;
- 3GPP TS 24.501 [42], clause 5.4.1.3.7

15.2.3.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in the 5G authentication challenge message to the USIM.
- 2) To verify that the ME returns the Synchronization-Failure in the *AUTHENTICATION FAILURE* message if the verification of AUTN failed on the USIM due to a synchronisation failure.

15.2.3.4 Method of test

15.2.3.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used and installed into the ME.

15.2.3.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- c) After reception of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the 5G AK' authentication procedure and sends 5G AKA challenge data in the *AUTHENTICATION REQUEST* message contains:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G Authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge): 128 bits value

- d) Using the data received in *AUTHENTICATION REQUEST* message the ME passes the RAND and AUTN to the USIM.
- e) The UICC returns AUTS parameter to the ME indicating that the verification of AUTN failed due to a synchronisation failure.
- f) The UE transmits the *AUTHENTICATION FAILURE* message and starts the timer T3520, the NG-SS sends an *AUTHENTICATION REQUEST* message.
- g) After the reception of *AUTHENTICATION REQUEST* message from the NG-SS, the ME forwards the received RAND, AUTN to the UICC and stops the timer T3520.
- h) After reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message, the UE sends a *SECURITY MODE COMPLETE* message
- i) Upon reception of *REGISTRATION ACCEPT* message with a new 5G-GUTI, the UE sends a *REGISTRATION COMPLETE* message.

15.2.3.5 Acceptance criteria

- 1) In step d) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 2) In step f) the UE sends *AUTHENTICATION FAILURE* message indicating:

5GMM cause: #21 "Synch failure"

Authentication Failure parameter: AUTS (see 3GPP TS 33.102 [45])
- 3) In step g) after the reception of *AUTHENTICATION REQUEST* message the UE shall stop the timer T3520.
- 4) In step h) ME shall send *AUTHENTICATION RESPONSE* message containing the response calculated in the USIM (RES).

15.2.4 Authentication procedure for 5G AKA - after SUPI is changed

15.2.4.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present

on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM. These 5GMM parameters can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory; else the UE shall delete the 5GMM parameters.

15.2.4.2 Conformance requirement

- 1) The UE shall support the 5G AKA based primary authentication and key agreement procedure.
- 2) The 5G NAS security context parameters shall be stored on the USIM if the corresponding file is present on the USIM, else the 5GMM parameters shall be stored in the non-volatile memory in the ME together with the SUPI from the USIM.
- 3) The UE shall delete the 5GMM parameters if the SUPI from the USIM does not match the SUPI stored in the non-volatile memory.

Reference:

- 3GPP TS 33.501 [41], clause 6.1.3.2;
- 3GPP TS 24.501 [42], clauses 5.4.1.3, Annex C.

15.2.4.3 Test purpose

- 1) To verify that the UE generates the 5G NAS security context parameters and stores them inside the non-volatile memory in the ME together with the SUPI from the USIM.
- 2) To verify that the UE rejects the SECURITY MODE COMMAND with the existing 5G NAS security context parameters if the SUPI is changed.

15.2.4.4 Method of test

15.2.4.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

The default 5G-NR UICC is used with the following exceptions and installed into the ME.

EF_{usr} (USIM Service Table)

Logically:

5GS Mobility Management Information not available

5G Security Parameters not available

Byte:	B1	...	B16
Binary:	...		xxx0 100x

15.2.4.4.2 Procedure

- a) Bring up Cell A and the UE is switched on with default IMSI.
- b) The UE sends REGISTRATION REQUEST to NG-SS. Further NG-SS responds with REGISTRATION REJECT (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- c) The UE is switched on, with IMSI set as 246081685533963.

- d) The UE sends *REGISTRATION REQUEST* to NG-SS. Further NG-SS responds *REGISTRATION REJECT* (cause: Roaming not allowed in this tracking area), and then UE is switched off.
- e) The UE is switched on with default IMSI.
- f) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- g) After receipt of a *REGISTRATION REQUEST* message from the UE during registration, the NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA challenge message in the *AUTHENTICATION REQUEST* message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G Authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge): 128 bits value

- h) After reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message, then the UE sends a *SECURITY MODE COMPLETE* message.
- i) The NG-SS sends a *REGISTRATION ACCEPT* message.
5G-GUTI: 24408300010266436587
TAI: 42 34 80 00 00 01
- j) The UE sends a *REGISTRATION COMPLETE* message.
- k) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure, then the NG-SS sends *RRCRelease* message.
- l) Change the UICC configuration (by setting the IMSI to 246081685533963), then switch the ME on.
- m) After the receipt of *REGISTRATION REQUEST* message from the UE during registration, the NG-SS performs *AUTHENTICATION* procedure and transmits a *SECURITY MODE COMMAND* message using the last calculated K_{AMF} (at step 'g') indicated by the ngKSI to activate NAS security.
- n) The UE is switched off.

15.2.4.5 Acceptance criteria

- 1) In step h) the UE sends a *SECURITY MODE COMPLETE* message.
- 2) In step m) the UE shall not use the 5G-GUTI or the Last visited registered TAI parameters in the *REGISTRATION REQUEST* message, instead it shall use SUCI as 5GS mobile identity IE.
- 3) During step m) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 4) After step m) and before step n) the UE sends *SECURITY MODE REJECT* message.

15.2.5 Authentication procedure for registrations on 3GPP access, 5G AKA - Authentication successful in different PLMNs

15.2.5.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

If the UE supports multiple records of NAS security context storage for multiple registration, the UE shall store the previously current 5G NAS security context in the second 5G security context of that access (see 3GPP TS 31.102 [4]) and store the new 5G security context in the first 5G security context, when the UE activates the new 5G security context for a different PLMN over that access but the previously current 5G NAS security context is associated with the 5G-GUTI of the other access.

If the previously current 5G NAS security context is not associated with the 5G-GUTI of the other access (e.g. UE uses only 3GPP access) the second record will not be used.

The EF_{5GS3GPPNSC} contains the 5GS 3GPP access NAS security context as defined in 3GPP TS 24.501 [42], consisting of K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values. This file shall contain two records if service n°136 is "available".

The EF_{5GAUTHKEYS} contains K_{AUSF} and K_{SEAF} that are generated on the ME using CK and IK as part of AKA procedures as described in 3GPP TS 33.501 [41]. If service n°133 is also "available" in EF_{UST}, the EF_{5GAUTHKEYS} also contains SOR counter and UE parameter update counter associated with the key K_{AUSF} as described in 3GPP TS 33.501 [41] and 3GPP TS 31.102 [4].

15.2.5.2 Conformance requirement

- 1) The UE shall support the 5G AKA based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in AUTHENTICATION REQUEST message to the USIM.
- 3) The ME shall compute RES* from RES according to Annex A.4 3GPP TS 33.501 [41] and return it in AUTHENTICATION RESPONSE message.
- 4) As a result of the first successful authentication procedure in a PLMN (PLMN 1 over 3GPP access), the 5G 3GPP access NAS security context parameters shall be stored on the USIM in the first record of the EF_{5GS3GPPNSC}.
- 5) As a result of the second successful authentication procedure in another (second) PLMN (PLMN 2 over 3GPP access), and the previously current 5G NAS security context is not associated with the 5G-GUTI of the other access the 5G 3GPP access NAS security context parameters of the PLMN 2 shall be stored on the USIM in the first record of the EF_{5GS3GPPNSC} since the previously current 5G NAS security context is not associated with the 5G-GUTI of the other access.
- 6) The 5G 3GPP access NAS security context parameters of PLMN 1 will be overwritten with the 5G 3GPP access NAS security context parameters of the PLMN 2. The second record of the EF_{5GS3GPPNSC} is not used.

Reference:

- 3GPP TS 31.102 [4], clauses 4.4.11.2, 4.4.11.3, 4.4.11.4, 4.4.11.5 and 4.4.11.6;
- 3GPP TS 33.501 [41], clause 6.1.3.2 and 6.3.2;
- 3GPP TS 24.501 [42], clause 4.4.2.1, 4.4.2.5, 5.4.1.3 and Annex C.

15.2.5.3 Test purpose

- 1) To verify that the ME forwards the RAND and AUTN received in 5G authentication challenge data from the first PLMN to the USIM within the AUTHENTICATION REQUEST message.
- 2) To verify that the ME sends AUTHENTICATION RESPONSE message contains the calculated RES* in response to AUTHENTICATION REQUEST message.
- 3) To verify that the ME stores 5G 3GPP access NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier in the first record of the EF_{5GS3GPPNSC} on the USIM. as service n°122 is "available".
- 4) To verify that ME forwards the RAND and AUTN received in 5G authentication challenge data from the second PLMN to the USIM within the AUTHENTICATION REQUEST message.

- 5) To verify that the ME sends *AUTHENTICATION RESPONSE* message contains the calculated RES* in response to *AUTHENTICATION REQUEST* message.
- 6) To verify that the ME stores (overwrites) 5G 3GPP access NAS security context parameters of the second PLMN (PLMN 2) when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier in the same first record of the EF_{5GS3GPPNSC} on the USIM.

15.2.5.4 Method of test

15.2.5.4.1 Initial conditions

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A –TAI (MCC/MNC/TAC): 244/083/000001.

- CellIdentity: "000000001"

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/084/000001.

- CellIdentity: "000000001"

Access control: unrestricted.

The 5G-NR UICC - support of Rel-16 features is used and the UICC is installed into the ME.

15.2.5.4.2 Procedure

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.
- c) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the AUTHENTICATION REQUEST message, uses:
 - ngKSI:
 - NAS key set identifier: '000'
 - TSC: '0'
 - Authentication parameter RAND (5G authentication challenge): 128 bits value
 - Authentication parameter AUTN (5G Authentication challenge). 128 bits value
- d) Using the 5G authentication challenge data received in AUTHENTICATION REQUEST message the ME pass the RAND and AUTN to the USIM.
- e) Upon reception of AUTHENTICATION RESPONSE message from the UE, the NG-SS sends a SECURITY MODE COMMAND message. The UE sends a SECURITY MODE COMPLETE message.
- f) The NG-SS sends a REGISTRATION ACCEPT message.
 - 5G-GUTI:24408300010266436587
 - TAI: 42 34 80 00 00 01
- g) The UE sends a REGISTRATION COMPLETE message.
- h) The UE is powered down.
- i) Bring down Cell A and bring up Cell B.

j) The UE is powered on. The UE reads the first record of the 5G 3GPP NAS security context from the USIM to construct a REGISTRATION REQUEST message. Upon reception of an *RRCSetupRequest* message from the UE, NG-SS transmits an *RRCSetup* message to the UE followed by reception of an *RRCSetupComplete* message from the UE.

k) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the AUTHENTICATION REQUEST message, uses:

ngKSI:

NAS key set identifier: '001'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

l) Using the 5G authentication challenge data received in AUTHENTICATION REQUEST message the ME pass the RAND and AUTN to the USIM.

m) Upon reception of AUTHENTICATION RESPONSE message from the UE, the NG-SS sends a SECURITY MODE COMMAND message. The UE sends a SECURITY MODE COMPLETE message.

n) The NG-SS sends a REGISTRATION ACCEPT message.

5G-GUTI: 24408400010266436587

TAI: 42 34 80 00 00 01

o) The UE sends a REGISTRATION COMPLETE message.

p) The UE is switched off or the UE's radio interface is switched off to perform the deregistration procedure.

15.2.5.5 Acceptance criteria

1) After step a) the ME shall read EF_{UST}, EF_{5GS3GPPNSC} and EF_{5GAUTHKEYS}.

2) During step c) the UE shall indicate within the REGISTRATION REQUEST for the NAS key set identifier that no key is available.

3) In step d) the ME forwards the RAND and AUTN received in AUTHENTICATION REQUEST message to the USIM.

4) During step e) the UE sends an AUTHENTICATION RESPONSE message contains:

Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42]

5) In step e) the UE shall send SECURITY MODE COMPLETE message.

6) After step e) the ME updates the EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, value not checked

K_{SEAF} for 3GPP access: 32 bytes, value not checked

K_{SEAF} for non-3GPP access: 32 bytes, all values set to 'FF'

SOR counter: 2 bytes, value not checked

UE parameter update counter: 2 bytes, value not checked

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	xx	xx
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	FF	FF	83	02	xx	xx
	B107	B108	B109	B110				
	84	02	xx	xx				

7) After step h) the ME updates EF_{5GS3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record:

ngKSI: 000

K_{AMF}: value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 007 (no key available)

K_{AMF}: value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

PLMN: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	07	81	xx	xx	...	xx

8) During step j) the ME shall read EF_{UST}, EF_{LOC}, EF_{5GS3GPPNSC} and EF_{5GAUTHKEYS}. The UE shall indicate within the REGISTRATION REQUEST for the NAS key set identifier the value '000'.

9) In step k) the ME forwards the RAND and AUTN received in AUTHENTICATION REQUEST message to the USIM.

10) During step m) the UE sends an AUTHENTICATION RESPONSE message contains:

Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42]

11) In step m) the UE shall send SECURITY MODE COMPLETE message.

12) After step m) as service n°133 is "available", the ME updates the EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, value not checked
 K_{SEAF} for 3GPP access: 32 bytes, value not checked
 K_{SEAF} for non-3GPP access: 32 bytes, all values set to 'FF'
 SOR counter: 2 bytes, value not checked
 UE parameter update counter: 2 bytes, value not checked

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	xx	xx
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	FF	FF	83	02	xx	xx
	B107	B108	B109	B110				
	84	02	xx	xx				

13) After step p) the ME updates EF_{5GS3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record

ngKSI: 001
 K_{AMF}: value not checked
 Uplink NAS count: any value
 Downlink NAS count: any value
 Identifiers of selected NAS integrity
 and encryption algorithms: any value
 Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	01	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 007 (no key available)
 K_{AMF}: value not checked

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity and encryption algorithms: any value

Identifiers of selected EPS NAS integrity and encryption algorithms for use after mobility to EPS: any value

PLMN: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	07	81	xx	xx	...	xx

15.3 Authentication procedure for 5G AKA over non-3GPP access via N3IWF

15.3.1 Authentication procedure for 5G AKA over non-3GPP access, Authentication is successful

15.3.1.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The Authentication server function (AUSF) shall handle authentication requests for both, 3GPP access and non-3GPP access.

The primary authentication and key agreement procedures shall bind the K_{SEAF} to the serving network. This serving network authentication shall be provided to the UE irrespective of the access network technology, so it applies to both 3GPP and non-3GPP access networks.

A UE authenticated to 5G network via an untrusted non-3GPP access network uses a vendor-specific EAP method 'EAP-5G' between the UE and the N3IWF and is utilized for encapsulating NAS messages.

K_{N3IWF} is a key derived by ME and AMF from K_{AMF} for the non-3GPP access. The N3IWF shall use K_{N3IWF} as the key MSK for IKEv2 between UE and N3IWF in the procedures for untrusted non-3GPP access. This key K_{N3IWF} and the IPsec SA cryptographic keys are taken into use with the establishment of IPsec Security Association (SA) between the UE and the N3IWF.

N3IWF sends an EAP-Success/EAP-5G to the UE to complete the EAP session and the IPsec SA is established between the UE and N3IWF by using the N3IWF key K_{N3IWF}

The 5G NAS security context parameters from a full native 5G NAS security context shall be stored on the USIM if the corresponding file $EF_{5GSN3GPPNSC}$ is present on the USIM as specified in 3GPP TS 31.102 [4]. If the corresponding file is not present on the USIM, this 5GMM parameters is stored in a non-volatile memory in the ME together with the SUPI from the USIM.

The $EF_{5GSN3GPPNSC}$ contains the 5GS 3GPP access NAS security context as defined in 3GPP TS 24.501 [42], consisting of K_{AMF} with the associated key set identifier, the UE security capabilities, and the uplink and downlink NAS COUNT values. This file shall contain two records for handling multiple registrations.

The $EF_{5GAUTHKEYS}$ contains K_{AUSF} and K_{SEAF} (separate keys for 3GPP access and non-3GPP access) that are generated on the ME using CK and IK as part of AKA procedures as described in TS 33.501[41]

15.3.1.2 Conformance requirement

- 1) The UE shall use vendor-specific EAP method 'EAP-5G' between the UE and the N3IWF and is utilized for encapsulating NAS messages
- 2) The UE shall support the 5G AKA based primary authentication and key agreement procedure using IKE_AUTH exchange.
- 3) The ME shall forward the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) The ME shall compute RES* from RES according to Annex A.4 TS 33.501[41] and return it in *AUTHENTICATION RESPONSE* message.
- 5) As a result of successful authentication procedure IPsec SA is established and, the 5G NAS security context parameters stored on the USIM (upon power down or DEREGISTRATION).
- 6) The ME shall store the K_{AUSF} and K_{SEAF} for 3GPP access and K_{SEAF} for non-3GPP access in EF_{5GAUTHKEYS} on the USIM.

Reference:

- TS 31.102 [4], clauses 4.4.11.3, 4.4.11.4 and 4.4.11.6;
- TS 33.501 [41], clauses 6.1.1.3, 6.1.3.2, 7.2.1;
- TS 24.501 [42], clause 5.4.1.3 and Annex C.

15.3.1.3 Test purpose

- 1) To verify that ME starts 'EAP-5G' (EAP Response/5G-NAS) between the UE and the N3IWF and is utilized for encapsulating NAS messages.
- 2) To verify that the ME forwards the RAND and AUTN upon receiving 5G authentication challenge data within *AUTHENTICATION REQUEST* message [EAP Request/5G-NAS/AKA Challenge] to the USIM.
- 2) To verify that the ME sends *AUTHENTICATION RESPONSE* message [EAP Response/5G-NAS/AKA Challenge] contains the calculated RES* in response to *AUTHENTICATION REQUEST* message.
- 3) To verify that ME sends [EAP Response/5G-NAS/Security Mode Complete] and received EAP-Success from N3IWF to confirm IPsec SA is established.
- 4) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier in EF_{5GSN3GPPNSC} on the USIM.
- 5) To verify that the ME stores the K_{AUSF} and K_{SEAF} for 3GPP access and K_{SEAF} for non-3GPP access in EF_{5GAUTHKEYS} on the USIM.

15.3.1.4 Method of test

15.3.1.4.1 Initial conditions

The NG-SS WLAN Cell A_w and UE are configured as in clause 4.y. Cell A_w and the N3IWF are in the PLMN 246/081.

The 5G-NR UICC– support of Rel-16 features as defined in clause 4.11 is used and the UICC is installed into the ME.

15.3.1.4.2 Procedure

- a) Bring up WLAN AP Cell A_w and the UE is switched on.
- b) UE connects to the untrusted non-3GPP access using the WLAN AP. UE associates with the WLAN AP and obtains the local IP address.
- c) UE selects the N3IWF and obtains its IP address.

- d) The UE establishes an IPsec tunnel as per the IKEv2 protocol as defined in TS 23.502 [xx] clause 4.12.2.2 figure 4.12.2.2-1.
- e) The NG-SS transmit EAP-Request/5G-Start.
- f) The UE transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message.
- g) The NG-SS transmits an EAP-Request/5G-NAS with NAS PDU [AUTHENTICATION REQUEST] message including EAP/5G AKA Challenge.

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- h) Using the 5G authentication challenge data received in AUTHENTICATION REQUEST message the ME pass the RAND and AUTN to the USIM.
- i) The UE transmits an EAP-Response/5G-NAS [AUTHENTICATION RESPONSE] message including EAP/5G AKA Challenge with the response received from the USIM.
- j) Upon reception of AUTHENTICATION RESPONSE message from the UE, The NG-SS transmits an EAP-Request/5G-NAS with NAS PDU a [SECURITY MODE COMMAND] message including EAP-Success.
- k) The UE transmits EAP-Response/5G-NAS with NAS PDU [SECURITY MODE COMPLETE] message.
- l) The NG-SS transmits EAP-Success and the IPsec SA is established.
- m) The NG-SS transmits a REGISTRATION ACCEPT message over IPsec SA.
5G-GUTI:24408300010266436587
TAI: 42 34 80 00 00 01
- n) The UE transmits a REGISTRATION COMPLETE message over IPsec SA.
- o) The UE is switched off or the UE's radio interface is switched off to perform the DEREGISTRATION procedure.

15.3.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST}, EF_{5GSN3GPPNSC}, and EF_{5GAUTHKEYS}.
- 2) During step f) the UE shall transmit EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message and the UE shall indicate within the REGISTRATION REQUEST for the NAS key set identifier that no key is available.
- 3) In step h) the ME forwards the RAND and AUTN received in AUTHENTICATION REQUEST message to the USIM.
- 4) During step i) the UE sends an AUTHENTICATION RESPONSE message contains:
Authentication response parameter: 16 octets RES* value calculated according to 3GPP TS 24.501 [42]
- 5) In step k) the UE shall send SECURITY MODE COMPLETE message.
- 6) In step l) UE receives EAP-Success to confirm IPsec SA is established.
- 7) After step m) the ME updates the EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF} : 32 bytes, value not checked

K_{SEAF} for 3GPP access: 32 bytes, all values set to 'FF'

K_{SEAF} for non-3GPP access: 32 bytes, value not checked

SOR counter: 2 bytes, all values set to 'FF'

UE parameter update counter: 2 bytes, all values set to 'FF'

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	FF	FF
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	xx	xx	83	02	FF	FF
	B107	B108	B109	B110				
	84	02	FF	FF				

7) After step o) the ME updates $\text{EF}_{5\text{GSN}3\text{GPPNSC}}$ as shown below.

$\text{EF}_{5\text{GSN}3\text{GPPNSC}}$ (5GS non-3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record:

ngKSI: 00

K_{AMF} : any value

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 07 (no key available)

K_{AMF} : invalid

Uplink NAS count: invalid

Downlink NAS count: invalid

Identifiers of selected NAS integrity
and encryption algorithms: invalid

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: invalid

PLMN identifier: invalid

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	07	00	81	FF	FF	...	FF

15.4 5G AKA Authentication procedure for Multiple registration over 3GPP access and non-3GPP access

15.4.1 5G AKA Authentication is successful in the same PLMN over 3GPP access and non-3GPP access

15.4.1.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The Authentication server function (AUSF) shall handle authentication requests for both, 3GPP access and non-3GPP access.

There are two cases where the UE can be multiple registered in different PLMN's serving networks or in the same PLMN's serving networks. When the UE is registered in a serving network over two types of access (e.g. 3GPP and non-3GPP), then the UE has two active NAS connections with the same AMF. A common 5G NAS security context is created during the registration procedure over the first access type.

Keys for more than one security context can be derived from the K_{SEAF} without the need of a new authentication run. A concrete example of this is that an authentication run over a 3GPP access network can also provide keys to establish security between the UE and a N3IWF used in untrusted non-3GPP access.

The AMF may decide to skip a new authentication run in case there is an available 5G security context for this UE by means of 5G-GUTI, e.g. when the UE successfully registered to 3GPP access. If the UE registers to the same AMF via non-3GPP access, the AMF can decide not to run a new authentication if it has an available security context to use. In this case, the UE shall directly take into use the available common 5G NAS security context and use it to protect the registration over the non-3GPP access.

The primary authentication and key agreement procedures shall bind the K_{SEAF} to the serving network. This serving network authentication shall be provided to the UE irrespective of the access network technology, so it applies to both 3GPP and non-3GPP access networks.

If the UE supports multiple records of NAS security context storage for multiple registration, the UE shall replace the previously current 5G NAS security context stored in the first 5G security context of that access with the new 5G security context (taken into use through a security mode control procedure), when the UE activates the new 5G security context for the same PLMN and access.

The $EF_{5GAUTHKEYS}$ contains K_{AUSF} and K_{SEAF} (keys for 3GPP access and non-3GPP access both) that are generated on the ME using CK and IK as part of AKA procedures as described in TS 33.501[41].

15.4.1.2 Conformance requirement

For 3GPP Access:

- 1) The UE shall support the 5G AKA based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.

The ME shall compute RES* from RES according to TS 33.501[41]

15.4.1.3 Test purpose

For 3GPP access:

- 1) To verify that the ME forwards the RAND and AUTN received in 5G authentication challenge data within *AUTHENTICATION REQUEST* message to the USIM.
- 2) To verify that the ME sends *AUTHENTICATION RESPONSE* message contains the calculated RES* in response to *AUTHENTICATION REQUEST* message.
- 3) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier and NAS COUNTs in the record 1 of EF_{5GS3GPPNSC} on the USIM.
- 4) To verify that the ME stores the K_{AUSF} and K_{SEAF} for 3GPP access in EF_{5GAUTHKEYS} on the USIM.

For non-3GPP access:

- 5) To verify that ME starts 'EAP-5G' (EAP Response/5G-NAS) between the UE and the N3IWF and is utilized for encapsulating NAS messages.
- 6) To verify that ME transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message protected, and integrity is verified successfully.
- 7) To verify that ME receives EAP-Success from N3IWF and IPsec SA is established.
- 8) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier and NAS COUNTs in the record 1 of EF_{5GSN3GPPNSC} on the USIM.
- 9) To verify that the ME stores the K_{SEAF} for non-3GPP access in EF_{5GAUTHKEYS} on the USIM.

15.4.1.4 Method of test

15.4.1.4.1 Initial conditions

For 3GPP access:

The NG-SS Cell A transmits on the BCCH, with the following network parameters:

- TAI (MCC/MNC/TAC):244/083/000001.
- Access control: unrestricted.

For non-3GPP access:

The NG-SS WLAN Cell A_w and UE are configured as in clause 4y. Cell A_w and N3IWF are in the PLMN 244/083.

The 5G-NR UICC – support of Rel-16 features as defined in clause 4.11 is used and the UICC is installed into the ME.

15.4.1.4.2 Procedure

For 3GPP access, PLMN-A:

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an RRCSetupRequest message from the UE, NG-SS transmits an RRCSetup message to the UE followed by reception of an RRCSetupComplete message from the UE.
- c) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the AUTHENTICATION REQUEST message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- d) Using the 5G authentication challenge data received in *AUTHENTICATION REQUEST* message the ME pass the RAND and AUTN to the USIM.
- e) Upon reception of *AUTHENTICATION RESPONSE* message from the UE, the NG-SS sends a *SECURITY MODE COMMAND* message. The UE sends a *SECURITY MODE COMPLETE* message.
- f) The NG-SS sends a *REGISTRATION ACCEPT* message.

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01

- g) The UE sends a *REGISTRATION COMPLETE* message.

For non-3GPP access, PLMN-A:

- h) Bring up WLAN AP Cell Aw.
- i) UE connects to the untrusted non-3GPP access using the WLAN AP. UE associates with the WLAN AP and obtains the local IP address.
- j) UE selects the N3IWF and obtains its IP address.
- k) The UE establishes an IPsec tunnel as per the IKEv2 protocol as defined in TS 23.502 [xx] clause 4.12.2.2 figure 4.12.2.2-1.
- l) The NG-SS transmit EAP-Request/5G-Start.
- m) The UE transmits EAP-Response/5G-NAS with NAS PDU [*REGISTRATION REQUEST*] message protected.
- n) The NG-SS transmits EAP-Success and the IPsec SA is established.
- o) The NG-SS transmits a *REGISTRATION ACCEPT* message over IPsec SA.

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01

- p) The UE transmits a *REGISTRATION COMPLETE* message over IPsec SA.
- q) The UE is switched off or the UE's radio interface is switched off to perform the *DEREGISTRATION* procedure.

15.4.1.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST}, EF_{5GS3GPPNSC}, EF_{5GSN3GPPNSC}, and EF_{5GAUTHKEYS}.
- 2) During step c) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step d) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) During step e) the UE sends an *AUTHENTICATION RESPONSE* message contains:

Authentication response parameter: 16 octets RES* value calculated according to TS 24.501 [42]

- 5) In step e) the UE shall send *SECURITY MODE COMPLETE* message.
- 6) During step m) the UE transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message protected and NG-SS verifies Integrity successfully.
- 7) In step n) UE receives EAP-Success to confirm IPSec SA is established.
- 8) After step q) the ME updates the EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, value not checked

K_{SEAF} (for 3GPP access): 32 bytes, value not checked

K_{SEAF} (for non-3GPP access): 32 bytes, value not checked

SOR counter: 2 bytes, invalid

UE parameter update counter: 2 bytes, invalid

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	FF	FF
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	xx	xx	83	02	FF	FF
	B107	B108	B109	B110				
	84	02	FF	FF				

- 9) After step q) the ME updates EF_{5GS3GPPNSC} and EF_{5GSN3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record:

ngKSI: 00

K_{AMF}: any value

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 07 (no key available)

K_{AMF}: invalid

Uplink NAS count: invalid

Downlink NAS count: invalid

Identifiers of selected NAS integrity
and encryption algorithms: invalid

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: invalid

PLMN identifier: invalid

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	07	81	FF	FF	...	FF

EF_{5GSN3GPPNSC} (5GS non-3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record:

ngKSI: same as in EF_{5GS3GPPNSC}

K_{AMF}: same as in EF_{5GS3GPPNSC}

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: same as in EF_{5GS3GPPNSC}

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: same as in EF_{5GS3GPPNSC}

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 07 (no key available)

K_{AMF}: invalid

Uplink NAS count: invalid

Downlink NAS count: invalid

Identifiers of selected NAS integrity
and encryption algorithms: invalid

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: invalid

PLMN identifier: invalid

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	07	81	FF	FF	...	FF

15.4.2 5G AKA Authentication is successful in the same PLMN over 3GPP access and non-3GPP access, and then 3GPP access on a different PLMN

15.4.2.1 Definition and applicability

The purpose of the 5G AKA based primary authentication and key agreement procedure is to provide mutual authentication between the UE and the network and to agree on the keys K_{AUSF} , K_{SEAF} and K_{AMF} . The UE and the AMF shall support the 5G AKA based primary authentication and key agreement procedure.

The Authentication server function (AUSF) shall handle authentication requests for both, 3GPP access and non-3GPP access.

There are two cases where the UE can be multiple registered in different PLMN's serving networks or in the same PLMN's serving networks. When the UE is registered in a serving network over two types of access (e.g. 3GPP and non-3GPP), then the UE has two active NAS connections with the same AMF. A common 5G NAS security context is created during the registration procedure over the first access type.

Keys for more than one security context can be derived from the K_{SEAF} without the need of a new authentication run. A concrete example of this is that an authentication run over a 3GPP access network can also provide keys to establish security between the UE and a N3IWF used in untrusted non-3GPP access.

The AMF may decide to skip a new authentication run in case there is an available 5G security context for this UE by means of 5G-GUTI, e.g. when the UE successfully registered to 3GPP access. If the UE registers to the same AMF via non-3GPP access, the AMF can decide not to run a new authentication if it has an available security context to use. In this case, the UE shall directly take into use the available common 5G NAS security context and use it to protect the registration over the non-3GPP access.

The primary authentication and key agreement procedures shall bind the K_{SEAF} to the serving network. This serving network authentication shall be provided to the UE irrespective of the access network technology, so it applies to both 3GPP and non-3GPP access networks.

If the UE supports multiple records of NAS security context storage for multiple registration, the UE shall replace the previously current 5G NAS security context stored in the first 5G security context of that access with the new 5G security context (taken into use through a security mode control procedure), when the UE activates the new 5G security context for the same PLMN and access; or

store the previously current 5G NAS security context in the second 5G security context of that access (see TS 31.102 [22]) and store the new 5G security context (taken into use through a security mode control procedure) in the first 5G security context, when the UE activates the new 5G security context for a different PLMN over that access but the previously current 5G NAS security context is associated with the 5G-GUTI of the other access;

The $EF_{5GAUTHKEYS}$ contains K_{AUSF} and K_{SEAF} (keys for 3GPP access and non-3GPP access both) that are generated on the ME using CK and IK as part of AKA procedures as described in TS 33.501[41].

15.4.2.2 Conformance requirement

For 3GPP Access, PLMN A:

- 1) The UE shall support the 5G AKA based primary authentication and key agreement procedure.
- 2) The ME shall forward the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 3) The ME shall compute RES* from RES according to TS 33.501[41], Annex A.4 and return it in *AUTHENTICATION RESPONSE* message.
- 4) As a result of successful authentication procedure, the 5G NAS security context parameters shall be stored on the record 1 of USIM $EF_{5SG3GPPNSC}$ upon power off or DEREGISTRATION.
- 5) The ME shall store the K_{AUSF} and K_{SEAF} for 3GPP access in $EF_{5GAUTHKEYS}$ on the USIM

For non-3GPP access, PLMN A:

- 6) The UE shall use vendor-specific EAP method 'EAP-5G' between the UE and the N3IWF and is utilized for encapsulating NAS messages.
- 7) The UE transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message protected using the common NAS security context (generated during 3GPP access Authentication) and the NAS COUNTs as 0.
- 8) As a result of successful Integrity verification, IPSec SA is established and the 5G NAS security context parameters shall be stored on the record 1 of USIM EF_{5SGN3GPPNSC} (upon power down or DEREGISTRATION).
- 9) The ME shall store the K_{SEAF} for non-3GPP access in EF_{5GAUTHKEYS} on the USIM.

For 3GPP Access, PLMN B:

- 10) The UE shall support the 5G AKA based primary authentication and key agreement procedure for 3GPP access on a new PLMN.
- 11) As a result of successful authentication procedure, the 5G NAS security context parameters for PLMN B shall be stored on the record 1 of USIM EF_{5SG3GPPNSC}, and 5G NAS security context parameters for PLMN A shall be stored on the record 2 of USIM EF_{5SG3GPPNSC} upon power off or DEREGISTRATION.
- 12) The ME shall store the K_{AUSF} and K_{SEAF} for 3GPP access on PLMN B in EF_{5GAUTHKEYS} on the USIM

Reference:

- TS 31.102 [4], clauses 4.4.11.3, 4.4.11.4, 4.4.11.6 and Annex O;
- TS 33.501 [41], clauses 6.1.1.3, 6.1.3.2, 7.2.1, 6.3.2.2, 6.4.2.2
- TS 24.501 [42], clauses 4.4.2.1, 5.4.1.3 and Annex C.

15.4.2.3 Test purpose

For 3GPP access, PLMN A:

- 1) To verify that the ME forwards the RAND and AUTN received in 5G authentication challenge data within *AUTHENTICATION REQUEST* message to the USIM.
- 2) To verify that the ME sends *AUTHENTICATION RESPONSE* message contains the calculated RES* in response to *AUTHENTICATION REQUEST* message.
- 3) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier and NAS COUNTs in the record 1 of EF_{5GS3GPPNSC} on the USIM.
- 4) To verify that the ME stores the K_{AUSF} and K_{SEAF} for 3GPP access in EF_{5GAUTHKEYS} on the USIM.

For non-3GPP access, PLMN A:

- 5) To verify that ME starts 'EAP-5G' (EAP Response/5G-NAS) between the UE and the N3IWF and is utilized for encapsulating NAS messages.
- 6) To verify that ME transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message protected, and integrity is verified successfully.
- 7) To verify that ME receives EAP-Success from N3IWF and IPSec SA is established.
- 8) To verify that the ME stores 5G NAS security context parameters when entering state 5GMM-DEREGISTERED, consisting of K_{AMF} with the associated key set identifier and NAS COUNTs in the record 1 of EF_{5GSN3GPPNSC} on the USIM.
- 9) To verify that the ME stores the K_{SEAF} for non-3GPP access in EF_{5GAUTHKEYS} on the USIM.

For 3GPP access, PLMN B:

- 10) To verify that the ME forwards the RAND and AUTN received in 5G authentication challenge data within AUTHENTICATION REQUEST message received from the PLMN-B to the USIM.
- 11) To verify that the ME sends AUTHENTICATION RESPONSE message contains the calculated RES* in response to AUTHENTICATION REQUEST message.
- 12) To verify that when ME entering state 5GMM-DEREGISTERED, it replaces the data in record 1 of EF_{5GS3GPPNSC} with 5G NAS security context parameters, consisting of K_{AMF} with the associated key set identifier and NAS COUNTs for PLMN-B, and stores the 5G NAS security context parameters of PLMN-A that was in record 1 along with PLMN identity of the PLMN-A on to the second record of EF_{5GS3GPPNSC}.
- 13) To verify that the ME stores the KAUSF and K_{SEAF} for 3GPP access in EF_{5GAUTHKEYS} on the USIM

15.4.2.4 Method of test

15.4.2.4.1 Initial conditions

For 3GPP access:

The NG-SS transmits on the BCCH, with the following network parameters:

Cell A –TAI (MCC/MNC/TAC): 244/083/000001.

- CellIdentity: "000000001"

Access control: unrestricted.

Cell B -TAI (MCC/MNC/TAC): 244/084/000001.

- CellIdentity: "000000001"

Access control: unrestricted.

For non-3GPP access:

The NG-SS WLAN Cell A_w and UE are configured as in clause 4y. Cell A_w and N3IWF are in the PLMN 244/083.

The default 5G-NR UICC as defined in clause 4.11 is used and the UICC is installed into the ME.

15.4.2.4.2 Procedure

For 3GPP access, PLMN-A:

- a) Bring up Cell A and the UE is switched on.
- b) Upon reception of an RRCSetupRequest message from the UE, NG-SS transmits an RRCSetup message to the UE followed by reception of an RRCSetupComplete message from the UE.
- c) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the AUTHENTICATION REQUEST message, uses:

ngKSI:

NAS key set identifier: '000'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- d) Using the 5G authentication challenge data received in AUTHENTICATION REQUEST message the ME pass the RAND and AUTN to the USIM.

- e) Upon reception of AUTHENTICATION RESPONSE message from the UE, the NG-SS sends a SECURITY MODE COMMAND message. The UE sends a SECURITY MODE COMPLETE message.
- f) The NG-SS sends a REGISTRATION ACCEPT message.

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01

- g) The UE sends a REGISTRATION COMPLETE message.

For non-3GPP access, PLMN-A:

- h) Bring up WLAN AP Cell Aw.
- i) UE connects to the untrusted non-3GPP access using the WLAN AP. UE associates with the WLAN AP and obtains the local IP address.
- j) UE selects the N3IWF and obtains its IP address.
- k) The UE establishes an IPsec tunnel as per the IKEv2 protocol as defined in TS 23.502 [xx] clause 4.12.2.2 figure 4.12.2.2-1.
- l) The NG-SS transmit EAP-Request/5G-Start.
- m) The UE transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message protected.
- n) The NG-SS transmits EAP-Success and the IPsec SA is established.
- o) The NG-SS transmits a REGISTRATION ACCEPT message over IPsec SA.

5G-GUTI:24408300010266436587

TAI: 42 34 80 00 00 01

- p) The UE transmits a REGISTRATION COMPLETE message over IPsec SA.

For 3GPP access, PLMN-B:

- q) Turn off Cell A and bring up Cell B.
- r) After receipt of a REGISTRATION REQUEST message from the UE during registration, the UE, NG-SS initiates the 5G AKA authentication procedure and sends 5G AKA-Challenge message in the AUTHENTICATION REQUEST message, uses:

ngKSI:

NAS key set identifier: '001'

TSC: '0'

Authentication parameter RAND (5G authentication challenge): 128 bits value

Authentication parameter AUTN (5G Authentication challenge). 128 bits value

- s) Using the 5G authentication challenge data received in AUTHENTICATION REQUEST message the ME pass the RAND and AUTN to the USIM.
- t) Upon reception of AUTHENTICATION RESPONSE message from the UE, the NG-SS sends a SECURITY MODE COMMAND message. The UE sends a SECURITY MODE COMPLETE message.
- u) The NG-SS sends a REGISTRATION ACCEPT message.

5G-GUTI:24408400010266436587

TAI: 42 44 80 00 00 01

- v) The UE sends a REGISTRATION COMPLETE message.

- w) The UE is switched off or the UE's radio interface is switched off to perform the DEREGISTRATION procedure.

15.4.2.5 Acceptance criteria

- 1) After step a) the ME shall read EF_{UST}, EF_{5GS3GPPNSC}, EF_{5GSN3GPPNSC}, and EF_{5GAUTHKEYS}
- 2) During step c) the UE shall indicate within the *REGISTRATION REQUEST* for the NAS key set identifier that no key is available.
- 3) In step d) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 4) During step e) the UE sends an *AUTHENTICATION RESPONSE* message contains:
Authentication response parameter: 16 octets RES* value calculated according to TS 24.501 [42]
- 5) In step e) the UE shall send *SECURITY MODE COMPLETE* message.
- 6) During step m) the UE transmits EAP-Response/5G-NAS with NAS PDU [REGISTRATION REQUEST] message protected and NG-SS verifies Integrity successfully.
- 7) In step n) UE receives EAP-Success to confirm IPSec SA is established.
- 8) In step r) UE initiates REGISTRATION REQUEST over 3GPP access on the new PLMN.
- 9) In step s) the ME forwards the RAND and AUTN received in *AUTHENTICATION REQUEST* message to the USIM.
- 10) During step t) the UE sends an *AUTHENTICATION RESPONSE* message contains:
Authentication response parameter: 16 octets RES* value calculated according to TS 24.501 [42]
and, the UE shall send *SECURITY MODE COMPLETE* message.
- 11) After step v), the ME updates the EF_{5GAUTHKEYS} as shown below.

EF_{5GAUTHKEYS} (5G authentication keys)

Logically:

K_{AUSF}: 32 bytes, any value
 K_{SEAF} (for 3GPP access): 32 bytes, any value
 K_{SEAF} (for non-3GPP access): 32 bytes, any value
 SOR counter: 2 bytes, invalid
 UE parameter update counter: 2 bytes, invalid

Coding:

Byte	B1	B2	B3	..	B35	B36	B37	..
Hex	80	20	xx	xx	81	20	xx	xx
	B69	B70	B71	..	B103	B104	B105	B106
	82	20	xx	xx	83	02	FF	FF
	B107	B108	B109	B110				
	84	02	FF	FF				

- 9) After step w) the ME updates EF_{5GS3GPPNSC} and EF_{5GSN3GPPNSC} as shown below.

EF_{5GS3GPPNSC} (5GS 3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record:

ngKSI: 01

K_{AMF} : any value

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 00

K_{AMF} : any value

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: any value

Identifiers of selected EPS NAS
integrity and encryption algorithms
for use after mobility to EPS: any value

PLMN identifier: 244/083

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	...	B58
Hex	A0	xx	80	01	00	81	xx	xx	...	86
	B59	B60	B61							
	42	34	80							

EF_{5GSN3GPPNSC} (5GS non-3GPP Access NAS Security Context)

Logically:

5GS NAS Security Context first record:

ngKSI: 00

K_{AMF} : same as in record 2 of EF_{5GS3GPPNSC}

Uplink NAS count: any value

Downlink NAS count: any value

Identifiers of selected NAS integrity
and encryption algorithms: same as in EF_{5GS3GPPNSC}

Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: same as in EF_{5GS3GPPNSC}

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	00	81	xx	xx	...	xx

5GS NAS Security Context second record:

ngKSI: 07 (no key available)

K_{AMF}: invalid

Uplink NAS count: invalid

Downlink NAS count: invalid

Identifiers of selected NAS integrity
 and encryption algorithms: invalid

Identifiers of selected EPS NAS
 integrity and encryption algorithms
 for use after mobility to EPS: invalid

PLMN identifier: invalid

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8	B9	Bx
Hex	A0	xx	80	01	07	81	FF	FF	...	FF

16 UE Route Selection Policy (URSP) procedure

16.1 Pre-configured URSP rules

16.1.1 Support for URSP by USIM

16.1.1.1 Definition and applicability

As specified in 3GPP TS 24.526 [50], if the UE has no signalled URSP, and the UE has pre-configured URSPs configured in both the USIM and the ME, then the UE shall use the pre-configured URSP in the USIM.

As specified in 3GPP TS 31.102 [4], the EF_{URSP} in the USIM contains UE Route Selection Policies per PLMN and shall be taken into account by the ME if EF_{UST} service ° 132 "Support for URSP by USIM" is available.

16.1.1.2 Conformance requirement

- 1) The UE shall support the URSP procedure.
- 2) The URSP rules shall be read from USIM if service n°132 is "available".
- 3) The ME shall use the URSP rules from USIM instead of any pre-configured URSP rules in ME if service n°132 is "available".

Reference:

- 3GPP TS 31.102 [4], clauses 5.2.34 and 4.4.11.12;

- 3GPP TS 24.526 [50], clause 4.2.2.2 and 5.2;
- 3GPP TS 23.501 [51], clauses 5.15.5.2 and 5.15.5.3,
- 3GPP TS 23.503 [52], clause 6.6.2.
- 3GPP TS 23.003 [14], clause 9A,

16.1.1.3 Test purpose

- 1) To verify that the ME reads the URSP rules from USIM if service n°132 is "available".
- 2) To verify that the ME uses the matching URSP rule from USIM to set the PDU session establishment parameters if service n°132 is "available".

16.1.1.4 Method of test

16.1.1.4.1 Initial conditions

The NG-SS parameters of the system simulator are:

- Mobile Country Code (MCC) = 246;
- Mobile Network Code (MNC) = 081;
- Tracking Area Code (TAC) = 000001;
- NG-SS Cell Id = 0001 (36 bits).

The Allowed S-NSSAI list is configured in NG-SS as '01 01 01 01', '01 01 01 02' and '01 01 01 03'.

The ME is pre-configured with the following URSP rules:

USRP rules for one PLMN only

- PLMN: 246 081

Rule Precedence =1

Traffic descriptor:

- DNN=TestGp.rs

Route Selection Descriptor:

- Precedence=1
- Network Slice Selection, S-NSSAI: 01 01 01 02 (ST: MBB, SD: 010102)
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

Rule Precedence = <lowest priority>

Traffic Descriptor: *

Route Selection Descriptor:

- Precedence = 1
- Network Slice Selection, S-NSSAI: 01 01 01 01 (ST: MBB, SD: 010101)
- SSC Mode Selection: SSC Mode 1
- DNN Selection: internet

The default 5G-NR UICC is used (with the following additions) and the UICC is installed into the ME.

EF_{UST} (USIM Service Table)

Logically:

- User controlled PLMN selector available
- Fixed dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications available
- 5GS Mobility Management Information available
- 5G Security Parameters available
- Subscription identifier privacy support available
- SUCI calculation by USIM not available
- Support for URSP by USIM

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx0 111x	xxxx 1xxx		

EF_{URSP} (URSP)

Logically:

URSP rules for one PLMN only

- PLMN: 246 081

Rule Precedence = 0

Traffic descriptor:

- DNN = TestGp.rs

Route Selection Descriptor:

- Precedence = 0
- Network Slice Selection, S-NSSAI: '01 01 01 03' (ST: MBB, SD: 010103)

Coding:	80	22	42	16	80	1E	00	1C
	00	00	0C	88	0A	06	54	65
	73	74	47	70	02	72	73	00
	0B	00	09	00	00	06	02	04
	01	01	01	03				

16.1.1.4.2 Procedure

- a) The UE is switched on.
- b) The UE is successful authenticated to PLMN 246 081 and the NG-SS indicates Allowed S-NSSAI list as '01 01 01 01', '01 01 01 02' and '01 01 01 03'.
- c) No URSP rules are provisioned by the PCF.
- d) The UE tries to connect to DNN=TestGp.rs
- e) After reception of the PDU SESSION ESTABLISHMENT REQUEST, the NG-SS sends PDU SESSION ESTABLISHMENT ACCEPT message.

16.1.1.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} and EF_{URSP}.
- 2) After step d) the UE sends PDU SESSION ESTABLISHMENT REQUEST to the network via UL NAS TRANSPORT with:

DNN: TestGp.rs

S-NSSAI: '01 01 01 03'

16.1.2 Support for URSP by ME

16.1.2.1 Definition and applicability

If the UE has no signalled URSP and the UE has only pre-configured URSPs configured in the ME, then the UE shall use the pre-configured URSP in the ME.

The pre-configured URSP can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME.

16.1.2.2 Conformance requirement

- 1) The UE shall support the URSP procedure.
- 2) The ME shall use the pre-configured URSP rules in the ME if there is no signalled URSP and UE has only pre-configured URSP in the ME.
- 3) The URSP can only be used if the SUPI from the USIM matches the SUPI stored in the non-volatile memory of the ME.

Reference:

- 3GPP TS 24.526 [50], clause 4.2.2.2 and 5.2;
- 3GPP TS 23.503 [52], clause 6.6.2.

16.1.2.3 Test purpose

- 1) To verify that the ME uses the matching URSP rule from ME to set the PDU session establishment parameters if there is no signalled URSP and there is no pre-configured URSP in the USIM.

16.1.2.4 Method of test

16.1.2.4.1 Initial conditions

The NG-SS parameters of the system simulator are:

- Mobile Country Code (MCC) = 244;
- Mobile Network Code (MNC) = 083;
- Tracking Area Code (TAC) = 000001;
- NG-SS Cell Id = 0001 (36 bits).

The Allowed S-NSSAI list is configured in NG-SS to include S-NSSAIs ('01 01 01 01', '01 01 01 01'), and ('01 01 01 02', '01 01 01 02').

The ME is pre-configured with the following URSP rules:

USRP rules for one PLMN only

- PLMN: 244 083

Rule Precedence = 1

Traffic descriptor:

- DNN = TestGp.rs

Route Selection Descriptor:

- Precedence = 1
- Network Slice Selection, S-NSSAI: 01 01 01 02 (ST: MBB, SD: 010102)
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

Rule Precedence = <lowest priority>

Traffic Descriptor: *

Route Selection Descriptor:

- Precedence = 1
- Network Slice Selection, S-NSSAI: 01 01 01 01 (ST: MBB, SD: 010101)
- SSC Mode Selection: SSC Mode 1
- DNN Selection: internet

The default 5G-NR UICC is used and the UICC is installed into the ME.

16.1.2.4.2 Procedure

- a) The UE is switched on.
- b) The UE successfully registers to PLMN 244 083 and the NG-SS indicates Allowed S-NSSAI list as '01 01 01 01' and '01 01 01 02'.
- c) No URSP rules are provisioned by the PCF.
- d) The UE tries to connect to DNN: TestGp.rs.
- e) After reception of the PDU SESSION ESTABLISHMENT REQUEST, the NG-SS sends PDU SESSION ESTABLISHMENT ACCEPT.

16.1.2.5 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST}.

- 2) After step d) the UE sends PDU SESSION ESTABLISHMENT REQUEST to the network via UL NAS TRANSPORT with

DNN: TestGp.rs

S-NSSAI: '01 01 01 02'

16.1.3 Support of Signalled URSP

16.1.3.1 Definition and applicability

The HPLMN pre-configured URSP in the ME and the HPLMN signalled URSP shall be stored in a non-volatile memory in the ME together with the SUPI from the USIM.

If the UE has both pre-configured URSP(s) and signalled URSP, the UE shall only use the signalled URSP. For a UE not operating in SNPN access mode, if the UE has no signalled URSP, and the UE has pre-configured URSPs configured in both the USIM and the ME, then the UE shall use the pre-configured URSP in the USIM. The HPLMN pre-configured URSP in the ME shall be stored until a new URSP is configured by HPLMN or the USIM is removed.

16.1.3.2 Conformance requirement

- 1) The UE shall support the URSP procedure.
- 2) If the UE has both pre-configured URSP(s) and signalled URSP, the UE shall only use the signalled URSP.

Reference:

- 3GPP TS 24.526 [50], clause 4.2.2.2 and 5.2;
- 3GPP TS 23.503 [52], clause 6.6.2.

16.1.3.3 Test purpose

- 1) To verify that the ME uses signalled URSP when provided rather than pre-configured URSP in the USIM or the ME.

16.1.3.4 Method of test

16.1.3.4.1 Initial conditions

The NG-SS is configured with the following parameters:

- Mobile Country Code (MCC) = 246;
- Mobile Network Code (MNC) = 081;
- Tracking Area Code (TAC) = 000001;
- NG-SS Cell Id = 0001 (36 bits).

The Allowed S-NSSAI list is configured in NG-SS as '01 01 01 01', '01 01 01 02' and '01 01 01 03'.

The ME is pre-configured with the following URSP rules:

USRP rules for one PLMN only

- PLMN: 246 081

Rule Precedence =1

Traffic descriptor:

- DNN=TestGp.rs

Route Selection Descriptor:

- Precedence=1
- Network Slice Selection, S-NSSAI: 01 01 01 01 (ST:MBB, SD: 010101)
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

The default 5G-NR UICC is used with the following exceptions:

EF_{UST} (USIM Service Table)

Logically:

- User controlled PLMN selector available
- Fixed dialling numbers available
- The GSM Access available
- The Group Identifier level 1 and level 2 not available
- Service n 33 (Packed Switched Domain) shall be set to '1'
- Enabled Services Table available
- EPS Mobility Management Information available
- Allowed CSG Lists and corresponding indications available
- 5GS Mobility Management Information available
- 5G Security Parameters available
- Subscription identifier privacy support available
- SUCI calculation by USIM not available
- Support for URSP by USIM available

Coding:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11		B16	B17		
	xxxx xxxx	xxxx xxxx	xx11 xxxx	.....	xxx0 111x	xxxx 1xxx		

EF_{URSP} (URSP)

Logically:

URSP rules for one PLMN only

- PLMN: 246 081

Rule Precedence = 0

Traffic descriptor:

- DNN=TestGp.rs

Route Selection Descriptor:

- Precedence=0

- Network Slice Selection, S-NSSAI: '01 01 01 02' (ST: MBB, SD: 010102)

Coding:

Byte:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Hex:	80	22	42	16	80	1E	00	1C	00	00	0C	88
	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24
	0A	06	54	65	73	74	47	70	02	72	73	00
	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35	B36
	0B	00	09	00	00	06	02	04	01	01	01	02

16.1.3.4.2 Procedure

- The UE is switched on;
- The UE successfully registers to PLMN 246 081 and the NG-SS indicates Allowed S-NSSAI list as '01 01 01 01', '01 01 01 02' and '01 01 01 03';
- No URSP rules are provisioned by the PCF;
- The UE tries to connect to DNN=TestGp.rs;
- After reception of the PDU SESSION ESTABLISHMENT REQUEST, the NG-SS sends PDU SESSION ESTABLISHMENT ACCEPT.
- The NG-SS releases the PDU Session;
- The NG-SS sends MANAGE UE POLICY COMMAND to the UE to update the URSP rule for DNN: "TestGp.rs"

Traffic Descriptor: DNN: 'TestGp.rs'

Route Selection Descriptor: S-NSSAI: '01 01 01 03'

- The UE tries to connect to DNN: TestGp.rs
- After reception of the PDU SESSION ESTABLISHMENT REQUEST, the NG-SS sends PDU SESSION ESTABLISHMENT ACCEPT.

16.1.3.5 Acceptance criteria

- After step a) the UE shall read EF_{UST} and EF_{URSP}.
- After step d) the UE sends PDU SESSION ESTABLISHMENT REQUEST to the network via UL NAS TRANSPORT with
DNN: TestGp.rs
S-NSSAI: '01 01 01 02'
- After step g) the UE sends MANAGE UE POLICY COMPLETE to the NG-SS
- After step h) the UE sends PDU SESSION ESTABLISHMENT REQUEST to the network via UL NAS TRANSPORT with
DNN: TestGp.rs
S-NSSAI: '01 01 01 03'

17 CAG list handling

17.1 CAG list handling for 5G

17.1.1 Automatic CAG selection with preconfigured CAG list on USIM

17.1.1.1 Definition and applicability

If MS supports CAG and is pre-configured with a non-empty "CAG information list" stored in the USIM, the MS in automatic PLMN selection mode shall consider a PLMN indicated by an NG-RAN cell only if

- A) the cell is a CAG cell and broadcasts a CAG-ID for the PLMN such that there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and the CAG-ID is included in the "Allowed CAG list" of the entry; or
- B) the cell is not a CAG cell and:
 - a. there is no entry with the PLMN ID of the PLMN in the "CAG information list"; or
 - b. there exists an entry with the PLMN ID of the PLMN in the "CAG information list" but the "indication that the MS is only allowed to access 5GS via CAG cells" is not included in the entry.

17.1.1.2 Conformance requirement

1) If service n°137 is "available" in EF_{UST} and preconfigured "CAG information list" is available on USIM, then an ME that supports CAG shall read EF_{CAG} and consider the PLMN indicated by the NG-RAN to perform automatic PLMN selection procedure.

2) If the available CAG cell broadcasts a CAG-ID for the PLMN such that there exists an entry with the PLMN ID of the PLMN in the "CAG information list" and the CAG-ID is included in the "Allowed CAG list" of the entry, then UE shall select the CAG cell.

Reference:

- TS 31.102 [4], clauses 4.4.11.14.
- TS 23.122 [31], clauses 3.8, 4.4.3.1.1
- TS 24.501 [42], clauses 9.11.3.18A

17.1.1.3 Test purpose

To verify that ME only selects the CAG cell if the PLMN ID and CAG ID of the cell is found in the EF_{CAG} (Pre-configured CAG information list) available on USIM.

17.1.1.4 Method of tests

17.1.1.4.1 Initial conditions

The NG-SS is configured with the following network parameters, and both cells are switched off:

CAG Cell A

- TAI (MCC/MNC/TAC):244/083/000001.
- cag-Identity: 00 00 00 02

CAG Cell B

- TAI (MCC/MNC/TAC):244/083/000002.
- cag-Identity: 00 00 00 09

The default CAG 5G-NR UICC is used and the UICC is installed into the Terminal.

17.1.1.4.2 Procedure

- a) Bring up CAG Cell B, and the UE is switched on.
- b) After 5 mins, bring up CAG Cell A and power down Cell B.
- c) The UE sends REGISTRATION REQUEST to the available CAG Cell A, indicates the registration type IE as "initial registration".
- d) The NG-SS sends REGISTRATION ACCEPT with a 5G-GUTI.
- e) The UE sends REGISTRATION COMPLETE to NG-SS.
- f) UE is switched off, and then Cell A is powered down.
- g) CAG Cell B is powered up again with SIB1 modified to indicate new cag-identity 00 00 00 07.
- h) The UE is now switched on.
- i) The UE sends REGISTRATION REQUEST to CAG Cell B, indicates the registration type IE as "initial registration".
- j) UE is switched off, and then NG-SS is powered down.

17.1.1.4.3 Acceptance criteria

- 1) After step a) ME shall not attempt registration to CAG Cell B.
- 2) At step c) ME shall send REGISTRATION REQUEST to CAG Cell A.
- 3) After step i) ME shall send REGISTRATION REQUEST to CAG Cell B.

18 NSSAA procedure with SSIM

18.1 SSIM management procedures

18.1.1 SSIM identification, S-NSSAI list request

18.1.1.1 Definition and applicability

If the decision of HPLMN, the SNPN or the slice owner is to require Network Slice-Specific Authentication and Authorization with a Credentials holder AAA Server (AAA-S) during the NSSAA procedure (see 3GPP TS 23.502 [58] and 3GPP TS 23.501 [49]) for a certain S-NSSAI and to require that the ME shall use the SSIM for this authentication and authorization, then the HPLMN (respectively SNPN or slice owner) shall provision a list of S-NSSAI in the SSIM that the HPLMN (respectively SNPN or slice owner) allows.

Prior to the slice establishment with AMF, the ME shall select the SSIM on the UICC to retrieve the S-NSSAI list supported by the SSIM.

18.1.1.2 Conformance requirement

- 1) If SSIM is supported on the UICC and declared in EF_{DIR} then the ME shall read EF_{NSSAI} from ADF_{SSIM} to identify the S-NSSAIs supported by the SSIM.
- 2) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure with the network then the ME shall relay the EAP packets between the AAA Server (AAA-S) and the SSIM using the SSIM AUTHENTICATE command and associated NSSAA procedure NAS messages (i.e.

NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND, NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE and NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT).

Reference:

- TS 31.105 [59], clauses 5.1.0, 5.1.1, 5.1.5, 7.2
- TS 33.501 [41], clause 16.3
- TS 23.501 [49], clauses 5.15.5.2.1, 5.15.10
- TS 23.502 [58], clause 4.2.9
- TS 24.501 [42], clauses 4.6.2.4, 5.4.7, 8.2.31, 8.2.32, 8.2.33

18.1.1.3 Test purpose

- 1) To verify that the ME identifies and selects the SSIM supported on the UICC
- 2) To verify that the ME presents the appropriate PIN prior to retrieve from the SSIM the supported S-NSSAI list
- 3) To verify that the ME retrieves from the SSIM the supported S-NSSAI list from EF_{NSSAI}
- 4) To verify that, during the NSSAA procedure requiring authentication and authorization during NSSAA procedure on a specific S-NSSAI supported by the SSIM, the ME relays the EAP packets between the AAA Server (AAA-S) and the SSIM using the SSIM AUTHENTICATE command and associated NSSAA procedure NAS messages.

18.1.1.4 Method of tests

18.1.1.4.1 Initial conditions

The browser's cache shall have been cleared before execution of the test sequence.

The ME shall have been cleared all Allowed-NSSAI and Rejected-NSSAI.

The ME is pre-configured with the following Configured-NSSAI:

PLMN: 001 01

- S-NSSAI: 01 01 01 01 (SST: eMBB, SD: 010101)
- S-NSSAI: 01 01 01 02 (SST: eMBB, SD: 010102)
- S-NSSAI: 01 01 01 03 (SST: eMBB, SD: 010103)

The ME is pre-configured with the following URSP rules:

URSP rules for one PLMN only (PLMN: 244 83):

Rule Precedence = 1

Traffic Descriptor:

- DNN = TestGp.rs

Route Selection Descriptor:

- Precedence = 1
- Network Slice Selection: S-NSSAI: 01 01 01 03 (SST: eMBB, SD: 010103)
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

Rule Precedence =2

Traffic Descriptor:

- DNN = Test12.rs

Route Selection Descriptor:

- Precedence = 1
- Network Slice Selection: S-NSSAI: 01 01 01 02 (SST: eMBB, SD: 010102)
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

Rule Precedence = <lowest priority>

Traffic Descriptor: *

Route Selection Descriptor:

- Precedence = 1
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

The NG-SS is configured with the following network parameters, and both cells are switched on:

Cell A

- Mobile Country Code (MCC): 244;
- Mobile Network Code (MNC): 83;
- Tracking Area Code (TAC): 000001;
- NG-RAN Cell Identity value: 0001 (36 bits);
- Subscribed S-NSSAIs: 01010102 (SST: eMBB, SD: 010102) and S-NSSAI is subject to NSSAA;

Cell B

- Mobile Country Code (MCC): 244;
- Mobile Network Code (MNC): 83;
- Tracking Area Code (TAC): 000002;
- NG-RAN Cell Identity value: 0002 (36 bits);
- Subscribed S-NSSAIs: 01010103 (SST: eMBB, SD: 010103) and S-NSSAI is subject to NSSAA;

The ME is connected to Cell A.

The default 5G-NR SSIM-UICC supporting SSIM features is used and the UICC is installed into the Terminal.

18.1.1.4.2 Procedure

- The UE sends REGISTRATION REQUEST to the NG-SS including Requested NSSAI including S-NSSAI 01010101 (SST: eMBB, SD: 010101), S-NSSAI 01010102 (SST: eMBB, SD: 010102) and S-NSSAIs 01010103 (SST: eMBB, SD: 010103) and indicating NSSAA support in 5GMM capability.
- The NG-SS send REGISTRATION ACCEPT to the UE without Allowed NSSAI and indicating "NSSAA to be performed" in 5GS registration result.
- The primary authentication and key agreement procedure is successfully completed.

- d) The NG-SS sends first NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND to the UE with an EAP-Request message and including S-NSSAI IE set to 01010102 (SST: eMBB, SD: 010102).
- e) The ME relays the EAP-Request packet from EAP message IE to the SSIM using AUTHENTICATE command.
- f) The ME retrieves the EAP-Response packet from the SSIM AUTHENTICATE command response.
- g) The UE sends first NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE to the NG-SS with an EAP-Response message including S-NSSAI IE set to 01010102 (SST: eMBB, SD: 010102) and EAP message IE containing EAP-Response packet from the SSIM.
- h) The UE and the NG-SS exchange successive NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND / NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE messages including S-NSSAI IE set to 01010102 (SST: eMBB, SD: 010102)
- i) To conclude the NSSAA procedure, the NG-SS sends NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message to the UE including S-NSSAI IE set to 01010102 (SST: eMBB, SD: 010102) and EAP message IE containing EAP-success or EAP-failure message.

18.1.1.4.2 Acceptance criteria

- 1) Before step d) the ME selects the SSIM, presents the appropriate PIN and reads all records of EF_{NSSAI}.
- 2) At step e), the ME relays EAP-Request from EAP message IE to the appropriate SSIM supporting the S-NSSAI 01010102 using AUTHENTICATE command.

18.1.2 S-NSSAI Authentication status verification procedure, authentication is successful

18.1.2.1 Definition and applicability

If a S-NSSAI supported by the SSIM application requires Network Slice-Specific Authentication and Authorization, then this S-NSSAI shall be part of the S-NSSAI List in EF_{NSSAI}, its authentication status shall be read by the ME in the EF_{EAPSTATUS} and to be equal to 'Authenticated' before using this S-NSSAI when declared in Allowed NSSAI by the network.

18.1.2.2 Conformance requirement

- 1) If SSIM is supported on the UICC and declared in EF_{DIR} then the ME shall read EF_{NSSAI} from ADF_{SSIM} to identify the S-NSSAIs supported by the SSIM.
- 2) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure, then the ME shall relay the EAP packets between the AAA Server (AAA-S) and the SSIM using the SSIM AUTHENTICATE command from associated NSSAA procedure.
- 3) If a new Allowed NSSAI needs to be delivered to the UE, then the NG-SS sends UE Configuration Update procedure to update the Allowed NSSAI based on the NSSAA procedure result.
- 4) The ME shall follow the S-NSSAI Authentication status verification procedure.
- 5) If the Authentication status for this S-NSSAI is 'Authenticated' in EF_{EAPSTATUS}, then a PDU session is established with this S-NSSAI.

Reference:

- TS 31.105 [59], clauses 5.1.0, 5.1.1, 5.1.5, 5.1.6
- TS 33.501 [41], clause 16.3
- TS 23.501 [49], clauses 5.15.5.2.1, 5.15.10
- TS 23.502 [58], clause 4.2.9

- TS 24.501 [42], clauses 5.4.7, 8.2.31, 8.2.32, 8.2.33

18.1.2.3 Test purpose

- 1) To verify that the S-NSSAI Authentication status verification procedure is performed correctly by the ME at the end of the NSSAA procedure.
- 2) To verify that a PDU session is established using authenticated S-NSSAI.

18.1.2.4 Method of tests

18.1.2.4.1 Initial conditions

The ME shall have cleared all Allowed-NSSAI and Rejected-NSSAI.

The ME is pre-configured with the following Configured-NSSAI:

PLMN: 001 01

- S-NSSAI: 01 01 01 01 (SST: eMBB, SD: 010101)

The ME is pre-configured with the following URSP rules:

USRP rules for one PLMN only (PLMN: 244 83):

Rule Precedence =1

Traffic Descriptor:

- DNN = Test12.rs

Route Selection Descriptor:

- Precedence = 1
- Network Slice Selection: S-NSSAI: 01 01 01 02 (SST: eMBB, SD: 010102)
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

Rule Precedence = <lowest priority>

Traffic Descriptor: *

Route Selection Descriptor:

- Precedence = 1
- SSC Mode Selection: SSC Mode 1
- Access Type preference: 3GPP access

The NG-SS is configured with the following network parameters, and cell A is switched on with:

- Mobile Country Code (MCC): 244;
- Mobile Network Code (MNC): 83;
- Tracking Area Code (TAC): 000001;
- NG-RAN Cell Identity value: 0001 (36 bits);
- Subscribed S-NSSAIs: 01010102 (SST: eMBB, SD: 010102) and S-NSSAI is subject to NSSAA;

The ME is connected to Cell A.

The default 5G-NR SSIM-UICC supporting SSIM features is used and the UICC is installed into the Terminal.

18.1.2.4.2 Procedure

- a) The UE sends REGISTRATION REQUEST to the NG-SS including Requested NSSAI including S-NSSAI 01010102 (SST: eMBB, SD: 010102) and indicating NSSAA support in 5GMM capability.
- b) The NG-SS sends REGISTRATION ACCEPT to the UE and indicates "NSSAA to be performed" in 5GS registration result.
- c) The primary authentication and key agreement procedure is successfully completed.
- d) The NG-SS sends first NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND to the UE with an EAP-Request message and including S-NSSAI IE set to 01010102 (SST: eMBB, SD: 010102).
- e) The UE and the NG-SS exchange successive EAP-Request/Response packets, relayed to/from the SSIM using AUTHENTICATE command.
- f) To conclude the NSSAA procedure, the NG-SS sends NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message to the UE including S-NSSAI IE set to 01010102 (SST: eMBB, SD: 010102) and EAP message IE containing EAP-success.
- g) SSIM updates Authentication status for the terminated NSSAA procedure associated with S-NSSAI 01010102 (SST: eMBB, SD: 010102) with value 'Authenticated'.
- h) The NG-SS to send CONFIGURATION UPDATE COMMAND with Allowed NSSAI IE including the authenticated S-NSSAI 01010102 (SST: eMBB, SD: 010102).
- i) The ME to read Authentication status corresponding to S-NSSAI 01010102 (SST: eMBB, SD: 010102) from EF_{EAPSTATUS}.
- j) The ME to initiate a PDU session establishment procedure with PDU SESSION ESTABLISHMENT REQUEST command.
- k) The NG-SS to accept the session establishment with PDU SESSION ESTABLISHMENT ACCEPT including S-NSSAI 01010102 (SST: eMBB, SD: 010102) in IE S-NSSAI.

18.1.2.4.3 Acceptance criteria

- 1) At step i), the ME checks Authentication status corresponding to S-NSSAI 01010102 is 'Authenticated'.
- 2) Steps j) and k) are performed successfully.

18.2 SSIM commands

18.2.1 AUTHENTICATE command, Identity EAP-Request/EAP-Response messages

18.2.1.1 Definition and applicability

If the decision of HPLMN, the SNPN or the slice owner is to require Network Slice-Specific Authentication and Authorization with a Credentials holder AAA Server (AAA-S) during the NSSAA procedure (see 3GPP TS 23.502 [58] and 3GPP TS 23.501 [49]) for a certain S-NSSAI and to require that the ME shall use SSIM for this authentication and authorization, then the HPLMN (respectively SNPN or slice owner) shall provision associated identifier (i.e. EAP Identifier).

At the beginning of the Network Slice-Specific Authentication and Authorization with a Credentials holder AAA Server (AAA-S) on supported S-NSSAI for a given SSIM, the ME shall:

- relay the EAP-Request/Identity packet from EAP message IE in the first NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND NAS message to the SSIM using AUTHENTICATE command.

- relay the EAP-Response/Identity packet returned by the SSIM on AUTHENTICATE command to EAP message IE in the first NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE NAS message.

18.2.1.2 Conformance requirement

- 1) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure with the network, then the ME shall relay the EAP-Request/Identity packet included in the first NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND NAS message from the network to the appropriate SSIM using the SSIM AUTHENTICATE command.
- 2) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure with the network, then the ME shall relay the EAP-Response/Identity packet included in the response of the first SSIM AUTHENTICATE command sent to the appropriate SSIM to the first NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE NAS message sent to the network.

Reference:

- TS 31.105 [59], clauses 4.2.2, 7.2
- TS 33.501 [41], clause 16.3
- TS 23.501 [49], clauses 5.15.5.2.1, 5.15.10
- TS 23.502 [58], clause 4.2.9
- TS 24.501 [42], clauses 5.4.7, 8.2.31, 8.2.32, 8.2.33

18.2.1.3 Test purpose

- 1) To verify that, at the beginning of the NSSAA procedure requiring authentication and authorization during NSSAA procedure on a specific S-NSSAI supported by the SSIM, the ME relays the EAP-Request/Identity packet from EAP message IE in the first NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND NAS message to the SSIM using AUTHENTICATE command.
- 2) To verify that, at the beginning of the NSSAA procedure requiring authentication and authorization during NSSAA procedure on a specific S-NSSAI supported by the SSIM, the ME relays the EAP-Response/Identity packet returned by the SSIM on AUTHENTICATE command to EAP message IE in the first NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE NAS message.

18.2.1.4 Method of tests

18.2.1.4.1 Initial conditions

The initial conditions defined in 18.1.1.4.1 apply.

18.2.1.4.2 Procedure

The procedure defined in 18.1.1.4.2 is used.

18.2.1.4.3 Acceptance criteria

- 1) On step e) the ME relays EAP-Request/Identity from EAP message IE to the appropriate SSIM supporting the S-NSSAI 01010102 using AUTHENTICATE command,
- 2) On step f) the returned EAP-Response/Identity is verylongusername1@3gpp.com.
- 3) All AUTHENTICATE commands are ODD INS only with a BER-TLV structure.
- 4) Only for 'First block of authentication data' (b8b7b6 of P1 set to '100') AUTHENTICATE command the S-NSSAI field is present in command data and set to 01010102.

18.2.2 AUTHENTICATE command, other EAP-Request/EAP-Response messages

18.2.2.1 Definition and applicability

If the decision of HPLMN, the SNPN or the slice owner is to require Network Slice-Specific Authentication and Authorization with a Credentials holder AAA Server (AAA-S) during the NSSAA procedure (see 3GPP TS 23.502 [58] and 3GPP TS 23.501 [49]) for a certain S-NSSAI and to require that the ME shall use SSIM for this authentication and authorization, then the HPLMN (respectively SNPN or slice owner) shall provision associated identifier (i.e. EAP Identifier) and credentials in the SSIM that the HPLMN (respectively SNPN or slice owner) allows.

During the Network Slice-Specific Authentication and Authorization with a Credentials holder AAA Server (AAA-S) on supported S-NSSAI for a given SSIM, the ME shall:

- relay the EAP-Request packet from EAP message IE in the NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND NAS message to the SSIM using AUTHENTICATE command.
- relay the EAP-Response packet returned by the SSIM on AUTHENTICATE command to EAP message IE in the NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE NAS message.

18.2.2.2 Conformance requirement

- 1) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure with the network, then the ME shall relay the EAP-Request packet included in the NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND NAS message from the network to the appropriate SSIM using the SSIM AUTHENTICATE command.
- 2) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure with the network, then the ME shall relay the EAP-Response packet included in the response of the SSIM AUTHENTICATE command from the SSIM to the NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE NAS message sent to the network.

Reference:

- TS 31.105 [59], clauses 7.2
- TS 33.501 [41], clause 16.3
- TS 23.501 [49], clauses 5.15.5.2.1, 5.15.10
- TS 23.502 [58], clause 4.2.9
- TS 24.501 [42], clauses 5.4.7, 8.2.31, 8.2.32, 8.2.33

18.2.2.3 Test purpose

- 1) To verify that, during the NSSAA procedure requiring authentication and authorization on a specific S-NSSAI supported by the SSIM, the ME relays the EAP-Request packet from EAP message IE in the NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND NAS message to the SSIM using AUTHENTICATE command.
- 2) To verify that, during the NSSAA procedure requiring authentication and authorization on a specific S-NSSAI supported by the SSIM, the ME relays the EAP-Response packet returned by the SSIM on AUTHENTICATE command to EAP message IE in the NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE NAS message.

18.2.2.4 Method of tests

18.2.2.4.1 Initial conditions

The initial conditions defined in 18.1.1.4.1 apply.

18.2.2.4.2 Procedure

The procedure defined in 18.1.1.4.2 is used.

18.2.2.4.3 Acceptance criteria

- 1) During step h) the ME relays to the appropriate SSIM supporting the S-NSSAI 01010102 the EAP-Request from EAP message IE received on NETWORK SLICE-SPECIFIC AUTHENTICATION COMMAND message to using AUTHENTICATE command,
- 2) During step h) the ME relays EAP-Response from the AUTHENTICATE command response to EAP message IE included in the NETWORK SLICE-SPECIFIC AUTHENTICATION COMPLETE message.
- 3) All AUTHENTICATE commands are ODD INS only with a BER-TLV structure.
- 4) Only for 'First block of authentication data' (b8b7b6 of P1 set to '100') AUTHENTICATE command the S-NSSAI field is present in command data and set to 01010102.
- 5) If EAP message does not fit in one single SSIM AUTHENTICATE command, following data of the EAP message are sent segmented using 'Next block of authentication data' (b8b7b6 of P1 set to '000') AUTHENTICATE command and the S-NSSAI field is not present in command data.

18.2.3 AUTHENTICATE command, EAP-Success/EAP-Failure messages

18.2.3.1 Definition and applicability

At the end of the Network Slice-Specific Authentication and Authorization with a Credentials holder AAA Server (AAA-S) on supported S-NSSAI for a given SSIM, the ME shall:

- relay the EAP-success/EAP-failure packet from EAP message IE in the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT NAS message to the SSIM using AUTHENTICATE command.

18.2.3.2 Conformance requirement

- 1) If one of the S-NSSAI supported by the SSIM requires authentication and authorization during NSSAA procedure with the network, then the ME shall relay the EAP-success/EAP-failure packet included in EAP message IE from the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT NAS message issued by the network to the appropriate SSIM using the SSIM AUTHENTICATE command.

Reference:

- TS 31.105 [59], clauses 7.2
- TS 33.501 [41], clause 16.3
- TS 23.501 [49], clauses 5.15.5.2.1, 5.15.10
- TS 23.502 [58], clause 4.2.9
- TS 24.501 [42], clauses 5.4.7, 8.2.31, 8.2.32, 8.2.33

18.2.3.3 Test purpose

- 1) To verify that, at the end of the NSSAA procedure requiring authentication and authorization on a specific S-NSSAI supported by the SSIM, the ME relays EAP-success/EAP-failure packet from EAP message IE in the NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT NAS message to the SSIM using AUTHENTICATE command.

18.2.3.4 Method of tests

18.2.3.4.1 Initial conditions

The initial conditions defined in 18.1.1.4.1 apply.

18.2.3.4.2 Procedure

The procedure defined in 18.1.1.4.2 is used.

18.2.3.4.3 Acceptance criteria

- 1) During step i) the ME relays to the appropriate SSIM supporting the S-NSSAI 01010102 the EAP-success or EAP-failure from EAP message IE received on NETWORK SLICE-SPECIFIC AUTHENTICATION RESULT message using AUTHENTICATE command,
- 2) The AUTHENTICATE command is ODD INS only with a BER-TLV structure.
- 3) Only for 'First block of authentication data' (b8b7b6 of P1 set to '100') AUTHENTICATE command the S-NSSAI field is present in command data and set to 01010102.

19 SOR-CMCI

19.1 SOR-CMCI PDU session

19.1.1 SOR-CMCI PDU session 'DNN'

19.1.1.1 Definition and applicability

During SOR procedure and while applying SOR-CMCI, the UE shall determine the time to release the PDU session when provided by the USIM. When a 'DNN' of the PDU session is included in SOR-CMCI, the UE shall check whether it has a PDU session with a 'DNN' matching to the 'DNN' included in SOR-CMCI. If so, the UE shall start an associated Tsor-cm timer with the value included in the SOR-CMCI (if the timer value is not zero). The ME shall release the PDU sessions and entering idle mode on Tsor-cm timer expiration.

19.1.1.2 Conformance requirement

The UE shall support the SOR procedure.

If service n°138 is "available" in EF_{UST}, the ME performs the reading procedure with EF_{SOR-CMCI}.

The ME shall use the SOR-CMCI rules from the USIM.

The ME shall release PDU session after a Tsor-cm period read in the USIM.

References:

- TS 31.102 [4], clause 4.4.11.15,
- TS 23.122 [31] Annex C.4,
- TS 24.501 [42], clause 9.11.3.51.

19.1.1.3 Test purpose

- 1) To verify that the ME performs the reading procedure with EF_{SOR-CMCI} from USIM if service n°138 is "available".

- 2) To verify that the ME checks whether it has a PDU session with a DNN matching to the 'DNN' included in EF_{SOR-CMCI}.
- 3) To verify that the ME, on PDU session established with 'DNN', starts a Tsor-cm with the value specified in the SOR-CMCI rule from EF_{SOR-CMCI} matching the 'DNN' of the PDU session.
- 4) To verify that the ME releases the PDU session after the Tsor-cm period.

19.1.1.4 Method of tests

19.1.1.4.1 Initial conditions

If any, all stored SOR-CMCI in the non-volatile memory of the ME have to be deleted.

The ME does not establish any PDU session.

The NG-SS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The default 5G-NR UICC supporting Rel-17 features is used, with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°132:	Support for URSP by USIM	not available
Service n°138:	SOR-CMCI storage in USIM	available

Coding:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xxxx xxxx	...	xxxx xxxx	xxxx 0xxx	xxxx xx1x	xxxx xxxx

EF_{SOR-CMCI} (Steering Of Roaming - Connected Mode Control Information)

Logically:

SOR-CMCI rule 1:

Tsor-cm timer value:	'00100001' (1 minute)
Criterion type:	DNN
Criterion value:	internet

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex:	80	0C	0B	21	01	08	69	6E
	B9	B10	B11	B12	B13	B14	B15	B16
	74	65	72	6E	65	74	FF	FF
	B17	B18	B19	B20	B21	B22	B23	B24
	FF	FF	FF	FF	FF	FF	FF	FF
	B25	B26	B27	B28				
	FF	FF	FF	FF				

19.1.1.4.2 Procedure

- a) The UE is switched on.
- b) The UE is successfull authenticated to PLMN 244 005 and no SOR-CMCI was provided during registration.

- c) The UE establishes a PDU session with 'DNN' = internet, an internal timer shall start to run.
- d) The UE releases the PDU Session after Tsor-cm expiration.

19.1.1.4.3 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} and EF_{SOR-CMCI}.
- 2) On step b) no SOR-CMCI is provided to the UE.
- 3) On Step d) the PDU Session is released after 1 minute + 10% (Tsor-cm coming from 'DNN' matching rule from EF_{SOR-CMCI}).

19.1.2 SOR-CMCI PDU session 'S-NSSAI SST and SD'

19.1.2.1 Definition and applicability

During SOR procedure and while applying SOR-CMCI, the UE shall determine the time to release the PDU session when provided by the USIM. When a 'S-NSSAI SST and SD' of the PDU session is included in SOR-CMCI, the UE shall check whether it has a PDU session with a 'S-NSSAI SST and SD' matching to the 'S-NSSAI SST and SD' included in SOR-CMCI. If so, the UE shall start an associated Tsor-cm timer with the value included in the SOR-CMCI (if the timer value is not zero). The ME shall release the PDU sessions and entering idle mode on Tsor-cm timer expiration.

19.1.2.2 Conformance requirement

The UE shall support the SOR procedure.

If service n°138 is "available" in EF_{UST}, the ME performs the reading procedure with EF_{SOR-CMCI}.

The ME shall use the SOR-CMCI rules from the USIM.

The ME shall release PDU session after a Tsor-cm period read in the USIM.

References:

- TS 31.102 [4], clause 4.4.11.15,
- TS 23.122 [31] Annex C.4,
- TS 24.501 [42], clause 9.11.3.51.

19.1.2.3 Test purpose

- 1) To verify that the ME performs the reading procedure with EF_{SOR-CMCI} from USIM if service n°138 is "available".
- 2) To verify that the ME checks whether it has a PDU session with a 'S-NSSAI SST and SD' matching to the 'S-NSSAI SST and SD' included in EF_{SOR-CMCI}.
- 3) To verify that the ME, on PDU session established with 'S-NSSAI SST and SD', starts a Tsor-cm timer with the value specified in the SOR-CMCI rule from EF_{SOR-CMCI} matching the 'S-NSSAI SST and SD' of the PDU session.
- 4) To verify that the ME releases the PDU session after the Tsor-cm period.

19.1.2.4 Method of tests

19.1.2.4.1 Initial conditions

If any, all stored SOR-CMCI in the non-volatile memory of the ME have to be deleted.

The ME does not establish any PDU session.

The NG-SS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.

The Allowed S-NSSAI list is configured in NG-SS as '01 01 01 01'.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The default 5G-NR UICC supporting Rel-17 features is used, with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°132:	Support for URSP by USIM	not available
Service n°138:	SOR-CMCI storage in USIM	available

Coding:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xxxx xxxx	...	xxxx xxxx	xxxx 0xxx	xxxx xx1x	xxxx xxxx

EF_{SOR-CMCI} (Steering Of Roaming - Connected Mode Control Information)

Logically:

SOR-CMCI rule 1:

Tsor-cm timer value:	'00100010' (2 minutes)
Criterion type:	S-NSSAI SST and SD
Criterion value:	'01 01 01 01' (SST: eMBB, SD: '010101')

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	07	06	22	03	01	01	01
	B9	B10	B11	B12	B13	B14	B15	B16
	01	FF	FF	FF	FF	FF	FF	FF
	B17	B18	B19	B20	B21	B22	B23	B24
	FF	FF	FF	FF	FF	FF	FF	FF
	B25	B26	B27	B28				
	FF	FF	FF	FF				

19.1.2.4.2 Procedure

- a) The UE is switched on.
- b) The UE is successfull authenticated to PLMN 244 005, and the NG-SS indicates Allowed S-NSSAI list as '01 01 01 01'. No SOR-CMCI was provided during registration.
- c) The UE establishes a PDU session with S-NSSAI set to '01 01 01 01', an internal timer shall start to run.
- d) The UE releases the PDU Session.

19.1.2.4.3 Acceptance criteria

- 3) After step a) the UE shall read EF_{UST} and $EF_{SOR-CMCI}$.
- 4) On step b) no SOR-CMCI is provided to the UE.
- 5) On Step d) the PDU Session is released after 1 minute + 10% (Tsor-cm coming from 'S-NSSAI SST and SD' ('01 01 01 01') matching rule from $EF_{SOR-CMCI}$).

19.1.3 SOR-CMCI PDU session with multiple rules 'DNN' and 'S-NSSAI SST and SD'

19.1.3.1 Definition and applicability

During SOR procedure and while applying SOR-CMCI, the UE shall determine the time to release the PDU session when provided by the USIM. When more than one criterion applicable for a PDU session are included in SOR-CMCI, the UE shall check whether it has a PDU session matching to the criterions included in SOR-CMCI. If so, the UE shall apply and start the Tsor-cm timer with the highest value of the matching criterions. The ME shall release the PDU session and entering idle mode on Tsor-cm timer expiration.

19.1.3.2 Conformance requirement

The UE shall support the SOR procedure.

If service n°138 is "available" in EF_{UST} , the ME performs the reading procedure with $EF_{SOR-CMCI}$.

The ME shall use the SOR-CMCI rules from the USIM.

The ME shall release PDU session after a Tsor-cm period read in the USIM.

References:

- TS 31.102 [4], clause 4.4.11.15,
- TS 23.122 [31] Annex C.4,
- TS 24.501 [42], clause 9.11.3.51.

19.1.3.3 Test purpose

- 1) To verify that the ME performs the reading procedure with $EF_{SOR-CMCI}$ from USIM if service n°138 is "available".
- 2) To verify that the ME checks whether it has a PDU session with a 'DNN' and 'S-NSSAI SST and SD' matching to the 'DNN' and 'S-NSSAI SST and SD' criterion included in $EF_{SOR-CMCI}$.
- 3) To verify that the ME, on PDU session established with 'DNN' and 'S-NSSAI SST and SD', starts a Tsor-cm timer with the value specified in the SOR-CMCI rule from $EF_{SOR-CMCI}$ matching the 'S-NSSAI SST and SD' (highest value of the two matching criterions) of the PDU session.
- 4) To verify that the ME releases the PDU session after the Tsor-cm period.

19.1.3.4 Method of tests

19.1.3.4.1 Initial conditions

If any, all stored SOR-CMCI in the non-volatile memory of the ME have to be deleted.

The ME does not establish any PDU session.

The NG-SS transmits on BCCH with the following network parameters:

- TAI (MCC/MNC/TAC): 244/005/000001.
- Access control: unrestricted.

The Allowed S-NSSAI list is configured in NG-SS as '01 01 01 01'.

The UICC is installed into the Terminal and the UE is set to automatic PLMN selection mode.

The default 5G-NR UICC supporting Rel-17 features is used, with the following exception:

EF_{UST} (USIM Service Table)

Logically:

Service n°132:	Support for URSP by USIM	not available
Service n°138:	SOR-CMCI storage in USIM	available

Coding:

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xxxx xxxx	...	xxxx xxxx	xxxx 0xxx	xxxx xx1x	xxxx xxxx

EF_{SOR-CMCI} (Steering Of Roaming - Connected Mode Control Information)

Logically:

SOR-CMCI rule 1:

Tsor-cm timer value:	'00100001' (1 minute)
Criterion type:	DNN
Criterion value:	internet

SOR-CMCI rule 2:

Tsor-cm timer value:	'00100010' (2 minutes)
Criterion type:	S-NSSAI SST and SD
Criterion value:	'01 01 01 01' (SST: eMBB, SD: '010101')

SOR-CMCI rule 3:

Tsor-cm timer value:	'00100011' (3 minutes)
Criterion type:	S-NSSAI SST and SD
Criterion value:	'01 01 01 02' (SST: eMBB, SD: '010102')

Coding:

Byte	B1	B2	B3	B4	B5	B6	B7	B8
Hex	80	1A	0B	21	01	08	69	6E
	B9	B10	B11	B12	B13	B14	B15	B16
	74	65	72	6E	65	74	06	22
	B17	B18	B19	B20	B21	B22	B23	B24
	03	01	01	01	01	06	23	03
	B25	B26	B27	B28				
	01	01	01	02				

19.1.3.4.2 Procedure

- The UE is switched on.
- The UE is successfull authenticated to PLMN 244 005 and no SOR-CMCI was provided during registration.
- The UE establishes a PDU session with DNN = internet and S-NSSAI set to '01 01 01 01', an internal timer shall start to run.
- The UE releases the PDU Session.

19.1.3.4.3 Acceptance criteria

- 1) After step a) the UE shall read EF_{UST} and $EF_{SOR-CMCI}$.
- 2) On step b) no SOR-CMCI is provided to the UE.
- 3) On Step d) the PDU Session is released after 2 minutes + 10% (T_{sor-cm} coming from 'S-NSSAI SST and SD' ('01 01 01 01') matching rule with highest value on two matching from $EF_{SOR-CMCI}$).

20 SENSE

20.1 Usage of Operator Controlled Signal threshold per ACT (operator enabled SENSE usage) on E-UTRAN

20.1.1 Definition and applicability

If "Operator controlled signal threshold per access technology" is supported by the UE and the received signal quality of registered PLMN observed over averaging window is lower than the "Operator controlled signal threshold per access technology" the MS shall periodically attempt to obtain service on an allowable PLMN/access technology combination for which the received signal quality of the candidate PLMN/access technology combination is equal to or greater than the "Operator controlled signal threshold per access technology", while in Automatic Network Selection Mode (see clause 4.4.3.1.1, TS 23.122 [31]).

Signal level enhanced network selection applies only to NB-IoT, GERAN EC-GSM-IoT and Category M1 or M2 of EUTRA. An MS supporting any, or a combination, of NB-IoT, GERAN EC-GSM-IoT and Category M1 or M2 of EUTRA shall apply signal level enhanced network selection if the conditions defined in clause 3.11, TS 23.122 [31] is fulfilled.

20.1.2 Conformance requirement

When the UE detects that the received signal quality of the registered PLMN is below the "Operator controlled signal threshold per access technology" the UE shall start the T_{SENSE} timer.

If upon expiry of the timer T_{SENSE} , the received signal quality of the registered PLMN observed over an averaging window is equal to or greater than the "Operator controlled signal threshold per access technology" the MS shall stay on the current selected PLMN.

If upon expiry of the timer T_{SENSE} , the received signal quality of the registered PLMN observed over an averaging window is less than the "Operator controlled signal threshold per access technology" the UE shall attempt to obtain service on an allowable PLMN/access technology combination, provided the received signal quality of the candidate PLMN/access technology combination is equal to or greater than the "Operator controlled signal threshold per access technology".

Reference:

- TS 23.122 [31], clauses 3.11, 4.4.3.5.

20.1.3 Test purpose

To verify that ME reads the "Operator controlled signal threshold per access technology" in USIM. If "SENSE is enabled by operator", and when the currently registered PLMN cell received signal level is reduced to a value lower than the signal quality configured in EF_{OCST} (for the entire duration of T_{SENSE}), then upon expiry of the timer T_{SENSE} UE shall attempt to obtain service on an allowable PLMN/access technology combination where the received signal quality is equal to or greater than the signal quality configured in EF_{OCST} .

20.1.4 Method of test

20.1.4.1 Initial conditions

For this test a E-UTRAN E-USS is required with Cell A, Cell B and Cell C.

The E-USS transmits on BCCH, with the following network parameters when switched on:

Cell A:

- TAI (MCC/MNC/TAC): 244/081/0001.
- Access control: unrestricted.

Cell B:

- TAI (MCC/MNC/TAC): 244/008/0001.
- Access control: unrestricted.

Cell C:

- TAI (MCC/MNC/TAC): 246/081/0001.
- Access control: unrestricted.

The default '5G-NR UICC – support of Rel-18 features' as defined in clause 4 is used with the following exception:

EF_{PLMNwACT} (User Controlled PLMN Selector with Access Technology)

- Logically:
- 1st PLMN: 244 081 (MCC MNC)
 - 1st ACT: E-UTRAN
 - 2nd PLMN: 244 008
 - 2nd ACT: E-UTRAN

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
Hex	42	14	80	40	00	42	84	00	70	00

EF_{OCST} (Operator controlled signal threshold per access technology)

- Logically: Operator has configured UE to use SENSE

1st ACT: E-UTRAN

Operator controlled signal threshold per access technology: -90 dBm

Coding:	B1	B2	B3	B4	B5	B6
Hex	01	80	03	40	00	5A

EF_{HPPLMN} (Higher Priority PLMN s)

- Logically: For an MS that only support any of the following or a combination of NB-S1 mode or GERAN EC-GSM-IoT or Category M1 of E-UTRAN enhanced-MTC mode, T is 2 hours. Otherwise T is 6 mins.

Coding:	B1
Hex	01

EF_{UST} (USIM Service Table)

- Logically:

Service n°148: UE configured for using "Operator controlled signal threshold per access technology" available

Coding:	B1	B2	B3	B4	B5	B6	B7	B8
Binary:	xxxx xx1x	xxxx xxxx	xxxx 1x00	xxxx x1xx	xxxx xx11	xxxx xxxx	xxxx xxxx	xxxx xxxx
	B9	B10	B11	...	B16	B17	B18	B19
	xxxx xxxx	xxxx xxxx	xx11 xxxx	...	xxx0 111x	1xx1 xxxx	xxxx xxxx	xxxx 1xxx

The UICC shall be installed into the Terminal and the UE shall be set to automatic PLMN selection mode.

20.1.4.2 Procedure

- a) Power up Cell A at -80 dBm and the UE is switched on.
- b) After receipt of an *RRConnectionRequest* from the UE on the Cell A the E-UTRAN E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* to the UE, with:

TAI (MCC/MNC/TAC):244/081/ 0001

GUTI: "24408100010266436587"
- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- e) Cell B is powered up at -80 dBm and Cell A is lowered to -100 dBm.
- f) Wait for T_{SENSE} duration.
- g) After receipt of an *RRConnectionRequest* from the UE on the Cell B the E-UTRAN E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- h) During registration and after receipt of a *TrackingAreaUpdateRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *TrackingAreaUpdateAccept* to the UE, with:

TAI (MCC/MNC/TAC):244/008/ 0001

GUTI: "24400800010266436587"
- i) After receipt of the *TrackingAreaUpdateComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- j) Cell A is powered off, and Cell C is powered on at -100dBm. Wait for High priority PLMN search timer to expire (6 mins).
- k) The UE is soft powered down after 8 min.

NOTE : For testing purposes, and to not extend the test execution time the implementation specific T_{SENSE} counter is set to 2 mins before starting the test.

20.1.5 Acceptance criteria

- 1) At step g) the UE shall send a *RRConnectionRequest* on the E-UTRAN-cell B (MCC/MNC 244/008) to the E-USS.
- 2) At step h) the terminal shall send *TrackingAreaUpdateRequest* to the E-USS.
- 3) After step h) the terminal shall respond with *TrackingAreaUpdateComplete* during registration.
- 4) After step i) the USIM shall contain the following values:

EF_{EPSLOC1} (EPS Information)

Logically: GUTI: 24400800010266436587
 Last visited registered TAI: 244/008/0001

EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	84	00	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	84	00	00	01	00				

- 5) After step j) the UE shall not send a *RRCConnectionRequest* on the E-UTRAN-cell C (MCC/MNC 244/081) to the E-USS.

20.2 Usage of Operator Controlled Signal threshold per ACT (operator disabled SENSE usage) on E-UTRAN

20.2.1 Definition and applicability

If signal level enhanced network selection is supported by the UE and the received signal quality of registered PLMN observed over averaging window is lower than the "Operator controlled signal threshold per access technology" the MS shall periodically attempt to obtain service on an allowable PLMN/access technology combination for which the received signal quality of the candidate PLMN/access technology combination is equal to or greater than the "Operator controlled signal threshold per access technology" in accordance with the Automatic Network Selection Mode as defined in clause 4.4.3.1.1 , TS 23.122 [31].

20.2.2 Conformance requirement

When the UE detects that the received signal quality of the registered PLMN is below the "Operator controlled signal threshold per access technology" the UE shall start the T_{SENSE} timer.

If upon expiry of the timer T_{SENSE} , the received signal quality of the registered PLMN observed over an averaging window is equal to or greater than the "Operator controlled signal threshold per access technology" the MS shall stay on the current selected PLMN.

If upon expiry of the timer T_{SENSE} , the received signal quality of the registered PLMN observed over an averaging window is less than the "Operator controlled signal threshold per access technology" the UE shall attempt to obtain service on an allowable PLMN/access technology combination, provided the received signal quality of the candidate PLMN/access technology combination is equal to or greater than the "Operator controlled signal threshold per access technology".

- TS 23.122 [31], clauses 3.11, 4.4.3.5.

20.2.3 Test purpose

To verify that ME reads the "Operator controlled signal threshold per access technology" in USIM. If "SENSE is disabled by operator", and when the currently registered PLMN cell received signal level is reduced to a value lower than the signal quality configured in E_{FOCST} (for the entire duration of T_{SENSE}), then upon expiry of the timer T_{SENSE} UE shall not attempt to obtain service on an allowable PLMN/access technology combination although the received signal quality is equal to or greater than the signal quality configured in E_{FOCST} .

20.2.4 Method of test

20.2.4.1 Initial conditions

The initial conditions defined in 20.1.4.1 is used with the following exception.

E_{FOCST} (Operator controlled signal threshold per access technology)

Logically: Operator has disabled UE to use SENSE

1st ACT: E-UTRAN

Operator controlled signal threshold per access technology: -90 dBm

Coding:	B1	B2	B3	B4	B5	B6
Hex	00	80	03	40	00	5A

The UICC shall be installed into the Terminal and the UE shall be set to automatic PLMN selection mode.

20.2.4.2 Procedure

- a) Bring up Cell A at -80 dBm and the UE is switched on.
- b) After receipt of an *RRConnectionRequest* from the UE on the Cell A the E-UTRAN E-USS sends *RRConnectionSetup* to the UE, followed by *RRConnectionSetupComplete* sent by the UE to the E-USS.
- c) During registration and after receipt of a *AttachRequest* from the UE, the E-USS initiates authentication, starts integrity by using the security procedure and sends *AttachAccept* to the UE, with:

TAI (MCC/MNC/TAC):244/081/ 0001

GUTI: "24408100010266436587"

- d) After receipt of the *AttachComplete* during registration from the UE, the E-USS sends *RRConnectionRelease*.
- e) Cell A is lowered to -100 dBm, and Cell B is powered up at -80 dBm
- f) Wait for T_{SENSE} duration.
- g) Wait for a period of 3 mins.
- h) The UE is soft powered down.

NOTE : For testing purposes, and to not extend the test execution time the implementation specific T_{SENSE} counter is set to 2 mins before starting the test.

20.2.5 Acceptance criteria

- 1) At step g) the UE shall not send a *RRConnectionRequest* on the E-UTRAN-cell B (MCC/MNC 244/008) to the E-USS.
- 2) After step h) the USIM shall contain the following values:

EF_{EPSLOCI} (EPS Information)

Logically: GUTI: 24408100010266436587
 Last visited registered TAI: 244/081/0001
 EPS update status: updated

Coding:	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11
Hex	0B	F6	42	14	80	00	01	02	66	43	65
	B12	B13	B14	B15	B16	B17	B18				
	87	42	14	80	00	01	00				

Annex A (informative): Structure for uac-BarringInfo and Operator-defined access category

Following methods are defined to generate the ASN.1 structure for `uac-BarringInfo` needed for test cases under clause 5.4.

Table A-1

Method	UAC_BarringInfo_Common
Description	Generate an ASN.1 <code>uac-BarringInfo</code> with <code>uac-BarringForCommon</code> structure according to the input parameters
Parameter(s)	- <code>paramAccessCat</code> , -- Access category
	- <code>paramBarringForAI</code> -- Barring for Access identity
Details	Generate the following ASN.1 structure:
	<code>uac-BarringInfo</code> {
	<code>uac-BarringForCommon</code> {
	{
	<code>accessCategory</code> <code>paramAccessCat</code> ,
	<code>uac-barringInfoSetIndex</code> 1
	}
	},
	<code>uac-BarringInfoSetList</code> {
	{
	<code>uac-BarringFactor</code> { <code>p00</code> } ,
	<code>uac-BarringTime</code> { <code>s512</code> } ,
	<code>uac-BarringForAccessIdentity</code> <code>paramBarringForAI</code>
	}
	}
	}

Table A-2

Method	UAC_BarringInfo_PerPLMN
Description	Generate an ASN.1 <code>uac-BarringInfo</code> with <code>uac-BarringPerPLMN-List</code> structure according to the input parameters
Parameter(s)	- <code>paramAccessCat</code> , -- Access category
	- <code>paramBarringForAI</code> -- Barring for Access identity
Details	Generate the following ASN.1 structure:
	<code>uac-BarringInfo {</code>
	<code>uac-BarringPerPLMN-List {</code>
	<code>{</code>
	<code>plmn-IdentityIndex 1,</code>
	<code>uac-ACBarringListType : uac-ExplicitACBarringList {</code>
	<code>{</code>
	<code>accessCategory paramAccessCat,</code>
	<code>uac-barringInfoSetIndex 1</code>
	<code>}</code>
	<code>}</code>
	<code>}</code>
	<code>},</code>
	<code>uac-BarringInfoSetList {</code>
	<code>{</code>
	<code>uac-BarringFactor {p00},</code>
	<code>uac-BarringTime {s512},</code>
	<code>uac-BarringForAccessIdentity paramBarringForAI</code>
	<code>}</code>
	<code>}</code>

	}

Table A-3

Method	UAC_BarringInfo_Common2
Description	Generate an ASN.1 uac-BarringInfo with 2 indexes in uac-BarringForCommon structure according to the input parameters
Parameter(s)	- paramAccessCat_1, -- Access category for index 1
	- paramBarringForAI_1 -- Barring for Access identity for index 1
	- paramAccessCat_2, -- Access category for index 2
	- paramBarringForAI_2 -- Barring for Access identity for index 2
Details	Generate the following ASN.1 structure:
	uac-BarringInfo {
	uac-BarringForCommon {
	{
	accessCategory paramAccessCat_1,
	uac-barringInfoSetIndex 1
	},
	{
	accessCategory paramAccessCat_2,
	uac-barringInfoSetIndex 2
	}
	},
	uac-BarringInfoSetList {
	{
	uac-BarringFactor {p00},
	uac-BarringTime {s512},

	uac-BarringForAccessIdentity paramBarringForAI_1
	},
	{
	uac-BarringFactor {p00},
	uac-BarringTime {s512},
	uac-BarringForAccessIdentity paramBarringForAI_2
	}
	}
	}

Following methods are defined to generate the structure for `Operator-defined access category definitions` IEI in the REGISTRATION ACCEPT message needed for ODAC test cases under clause 5.4.

Table A-4

Method	ODAC_definitions1	
Description	Generate an <code>Operator-defined access category definitions</code> IEI with only one definition in <code>Operator_defined_AC_definitions_IE</code> structure as per the input parameters provided.	
Parameter(s)	• paramOdac_num -- Operator-defined access category number	
Details	Generate the following IE structure:	
	Octet 1	Operator-defined access category definitions IEI : 0x76
	Octet 2-3	Length of operator-defined access category definitions contents : 0x001E
	Octet 4	Length of operator-defined access category definition 1 : 0x1D
	Octet 5	Precedence value : 0x00
	Octet 6	PSAC : 0, Operator-defined access category number : paramOdac_num (000?????)
	Octet 7	Length of Criteria : 0x1A
	Octet 8	Criteria_1 Type : 0x00 (DNN Type)
	Octet 9	Criteria_1 length-value pair Count : 0x02
	Octet 10	Criteria_1 length-value pair_1 Length : 0x0B
	Octet 11 - 21	Criteria_1 length-value pair_1 Value : 0x0654657374477003727331 (TestGp.rs1)
	Octet 22	Criteria_1 length-value pair_2 Length : 0x0B
	Octet 23 - 33	Criteria_1 length-value pair_2 Value : 0x0654657374477003727333 (TestGp.rs3)

Table A-5

Method	ODAC_definitions2	
Description	Generate an Operator-defined access category definitions IEI with two definition in Operator_defined_AC_definitions_IE structure as per the input parameters provided.	
Parameter(s)	paramOdac_num_1 -- Operator-defined access category number (Precedence 0)	
	paramOdac_num_2 -- Operator-defined access category number (Precedence 1)	
Details	Generate the following IE structure:	
	Octet 1	Operator-defined access category definitions IEI : 0x76
	Octet 2-3	Length of operator-defined access category definitions contents : 0x0030
	Octet 4	Length of operator-defined access category definition 1 : 0x11
	Octet 5	Precedence value : 0x00
	Octet 6	PSAC : 0, Operator-defined access category number : paramOdac_num_1 (000?????)
	Octet 7	Length of Criteria : 0x0E
	Octet 8	Criteria Type : 0x00 (DNN Type)
	Octet 9	Criteria length-value pair count : 0x01
	Octet 10	Criteria_1 length-value pair_1 Length : 0x0B
	Octet 11 - 21	Criteria_1 length-value pair_1 Value : 0x0654657374477003727332 (TestGp.rs2)
	Octet 22	Length of operator-defined access category definition 2 : 0x1D
	Octet 23	Precedence value : 0x01
	Octet 24	PSAC : 0, Operator-defined access category number : paramOdac_num_2 (000?????)
	Octet 25	Length of Criteria : 0x1A
	Octet 26	Criteria Type : 0x00 (DNN Type)
	Octet 27	Criteria length-value pair count : 0x01
	Octet 28	Criteria_1 length-value pair_1 Length : 0x0B
	Octet 29 - 39	Criteria_1 length-value pair_1 Value : 0x0654657374477003727333 (TestGp.rs3)
	Octet 40	Criteria Type : 0x02 (S-NSSAI Type)
	Octet 41	Criteria length-value pair count : 0x02
	Octet 42	Criteria_2 length-value pair_1 Length : 0x04
	Octet 43 - 46	Criteria_2 length-value pair_1 Value : 0x01010102 (ST: MBB, SD: 010102)
	Octet 47	Criteria_2 length-value pair_2 Length : 0x04
	Octet 48 - 51	Criteria_2 length-value pair_2 Value : 0x01010101 (ST: MBB, SD: 010101)

Annex B (informative):

5G-NR generic procedure for 5G Registration on 3GPP access with IMS service

Step	Direction	Action	Information
1	NG-SS	NG-SS Cell is powered up with SIB1 as defined in the test case initial conditions and the additional requirements as defined in clause 4.x.	pc_ue_usage_voice_centric is TRUE
2	UE	The UE is powered on	
3	UE <> NG-SS	UE camps on NG-SS Cell and establishes RRC connection	
4	UE > NG-SS	UE sends REGISTRATION REQUEST	
5	NG-SS > UE	NG-SS sends AUTHENTICATION REQUEST message.	
6	UE	UE passes the RAND and AUTN values to the USIM	
7	UE > NG-SS	UE sends AUTHENTICATION RESPONSE message with RES value calculated according to TS 24.501 [42]	The UE shall return RES equal to the XRES calculated at the NG-SS
8	NG-SS > UE	NG-SS sends SECURITY MODE COMMAND message	
9	UE > NG-SS	UE send SECURITY MODE COMPLETE	
10	NG-SS > UE	NG-SS sends REGISTRATION ACCEPT message	
11	UE > NG-SS	UE sends REGISTRATION COMPLETE	
12	UE > NG-SS	The UE sends an ULInformationTransfer message with a PDU SESSION ESTABLISHMENT REQUEST for the DNN type 'ims'.	5GMM: UL NAS TRANSPORT 5GSM: PDU SESSION ESTABLISHMENT REQUEST (DNN=IMS)
13	NG-SS > UE	The NG-SS sends an RRCReconfiguration message with an PDU SESSION ESTABLISHMENT ACCEPT	5GMM: DL NAS TRANSPORT 5GSM: PDU SESSION ESTABLISHMENT ACCEPT
14	UE > NG-SS	The UE sends an RRCReconfigurationComplete message	
15	UE <> NG-SS	IMS Registration procedure according TS 34.229-5 [yy] subclause A.2 (steps 1-8).	

Annex C (informative): Change history

Change history							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
CT-28	CT-28	CP-050139	068	-	B	Introduction of BCD number/ SSC content extension tests	6.0.0
CT-28	CT-28	CP-050139	072	-	B	Introduction of ACL tests	6.0.0
CT-28	CT-28	CP-050139	073	-	B	Introduction of SDN tests	6.0.0
CT-28	CT-28	CP-050139	074	-	B	Introduction of phonebook selection/ local phonebook handling test	6.0.0
CT-29	CT-29	CP-050325	080	-	A	Incorrect PUK2 value used in TC 6.1.6	6.1.0
CT-29	CT-29	CP-050325	088	-	A	Incorrect value used for EF SMS in TC 8.2.2	6.1.0
CT-29	CT-29	CP-050331	076	-	A	Incorrect MCC value used in TC 7.4.1	6.1.0
CT-29	CT-29	CP-050336	083	-	F	Clarification of BCD number/ SSC content extension tests	6.1.0
CT-29	CT-29	CP-050336	081	-	F	Numbering and minor corrections	6.1.0
CT-30	CT-30	CP-050494	090	-	F	CR to create combined R99 – Rel-6 version	6.2.0
CT-31	CT-31	CP-060020	095	-	F	Essential correction of TC 7.2.1	6.3.0
CT-31	CT-31	-	-	-	-	Update of Change History by TB Officer	6.3.1
CT-32	CT-32	CP-060285	0096	-	F	Essential correction of acceptance criteria in 6.1.3.5 and 6.1.4.5	6.4.0
CT-32	CT-32	CP-060286	0097	-	F	Essential corrections on ACL TC 9.1.1	6.4.0
CT-33	CT-33	CP-060507	0098	1	F	Essential corrections on Applicability table	6.5.0
CT-34	CT-34	CP-060543	0099	1	F	Essential corrections to 8.1.2	6.6.0
CT-34	CT-34	CP-060543	0100	1	F	Essential correction of EF PLMNwACT coding	6.6.0
CT-35	CT-35	CP-070064	0101	1	F	Essential correction of UICC presence detection test	6.7.0
CT-36	CT-36	-	-	-	-	Update to Rel-7 version (MCC)	7.0.0
CT-37	CT-37	CP-070617	0103	-	F	Essential correction of Location Area Information parameter in test 7.3	7.1.0
CT-37	CT-37	CP-070617	0104	-	F	Essential correction of the applicability of tests 6.4.2, 6.4.3, 6.4.4	7.1.0
CT-38	CT-38	CP-070846	0105	-	F	Essential correction on test case 7.1.2	7.2.0
CT-38	CT-38	CP-070846	0106	1	C	Introduction of Rel-7 test case applicability	7.2.0
CT-38	CT-38	CP-070846	0107	1	F	Essential correction of Location Updating Accept/ Attach Accept parameters in 7.1.1	7.2.0
CT-38	CT-38	CP-070846	0108	1	F	Essential correction of network parameters and acceptance criteria in 7.4.1	7.2.0
CT-38	CT-38	CP-070846	0109	1	F	Correction of reference to 3GPP TS 23.140	7.2.0
CT-39	CT-39	CP-080171	0110	-	F	Sequence indication error in 7.1.2.4.2 fixed after wrong implementation of CR 0105	7.3.0
CT-39	CT-39	CP-080171	0111	1	F	Essential correction to Access Class Barred IE coding in tables 5-1a and 5-1b	7.3.0
CT-40	CT-40	CP-080387	0112	-	F	Essential correction to network simulator configuration in test 5.2.1	7.4.0
CT-40	CT-40	CP-080387	0113	-	F	Essential correction to test 7.3.1	7.4.0
CT-40	CT-40	CP-080387	0114	1	F	Essential correction of the test case applicability for terminals not supporting speech calls	7.4.0
CT-41	CT-41	CP-080587	0115	-	F	Essential correction of TC 8.4 applicability	7.5.0
CT-42	CT-42	-----	-	-	-	Upgrade to copyright, keywords and logo for LTE	8.0.0
CT-43	CT-43	CP-090458	0116	1	B	Definition of LTE™ tests	8.1.0
CT-43	CT-43	CP-090458	0118	-	B	Definition of clause 7.2, 7.3 and 7.4 LTE™ tests	8.1.0
CT-43	CT-43	CP-090458	0119	1	F	Clarification of class 2 SMS test	8.1.0
CT-43	CT-43	CP-090458	0120	2	F	Clarification of PIN MMI string test	8.1.0
CT-45	CT-45	CP-090717	0121	1	B	Definition of CSG related test cases for E-UTRA	8.2.0
CT-45	CT-45	CP-090717	0122	1	B	Definition of EPS NAS Security Context cases for E-UTRA/EPC	8.2.0
CT-45	CT-45	CP-090717	0123		F	Essential correction of test 6.1.12	8.2.0
CT-45	CT-45	CP-090717	0124	1	F	Correction of tests 7.4.2 and 7.4.4	8.2.0
CT-45	CT-45	CP-090717	0126	1	B	Definition of CSG related test cases for E-UTRA, Part 2	8.2.0
CT-45	CT-45	CP-090717	0127		F	Essential corrections on LTE related test cases	8.2.0
CT-46	CT-46	CP-090997	0130		F	Correction of EF UST in clause 4.4.1	8.3.0
CT-46	CT-46	CP-090998	0133	1	F	Editorial correction of the naming of RRCConnectionRequest	8.3.0
CT-46	CT-46	CP-090998	0131	3	F	Definition of the UICC presence detection test when connected to E-UTRAN/EPC	8.3.0
CT-46	CT-46	CP-090998	0132	3	F	Definition of ACL related test cases for E-UTRA	8.3.0
CT-46	CT-46	CP-090998	0135		F	Update of CGS list tests	8.3.0
CT-46	CT-46	-	-	-	-	Upgrade of the specification to Rel-9	9.0.0
CT-47	CT-47	CP-100195	0139	1	D	Editorial modifications about missing clause numbers	9.1.0
CT-47	CT-47	CP-100193	0137	-	F	Introduction of Rel-9 applicability and applicability table corrections	9.1.0
CT-48	CT-48	CP-100394	0141		F	Essential correction of Unblock Universal PIN value description in 4.1.1.21	9.2.0
CT-48	CT-48	CP-100394	0140	1	F	Essential correction to applicability table	9.2.0

Change history							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
CT-48	CT-48	CP-100394	0143	1	F	Essential corrections on the initial conditions of E-UTRAN related test cases	9.2.0
CT-48	CT-48	CP-100394	0144		F	Correction of inconsistent terminology for E-UTRAN-related elements	9.2.0
CT-49	CT-49	CP-100589	0147	1	F	Addition of CSG Type and Home NodeB Name display test	9.3.0
CT-49	CT-49	CP-100590	0146	1	F	Essential corrections on E-UTRAN / EPC related test cases	9.3.0
CT-49	CT-49	CP-100592	0145	1	F	Update of references	9.3.0
CT-50	CT-50	CP-100831	0150	1	F	Correction of incorrect Expected IMSI value in TC 5.1.8 acceptance criteria	9.4.0
CT-50	CT-50	CP-100831	0151	1	F	Addition of LTE-related services to EF_UST in LTE test cases	9.4.0
CT-50	CT-50	CP-100830	0148	1	B	Definition of E-UTRAN/EPC ISIM-UICC for ISIM related testing	9.4.0
CT-51	CT-51	CP-110264	0153	3	C	Split of test 8.2.1 for independent verification of correct 'Class 2 SM storage on the USIM' and 'SM memory capacity exceeded handling' support	9.5.0
CT-51	CT-51	CP-110232	0154	7	B	Introduction of ISIM related SMS tests	9.5.0
CT-51	CT-51	CP-110232	0155		B	Introduction of ISIM and USIM related SMS reading test	9.5.0
CT-51	CT-51	CP-110264	0156	1	F	Essential correction on TC 5.1.10	9.5.0
SP-51	SP-51					Automatic upgrade from previous version 9.5.0	10.0.0
CT-52	CT-52	CP-110502	0158	1	F	Removal of tel URI in EF_IMPU of the default configuration of a E-UTRAN/EPC ISIM UICC	10.1.0
CT-52	CT-52	CP-110502	0159		F	Essential correction of test 11.1 regarding EF EPSNSC updates	10.1.0
CT-53	CT-53	CP-110718	0161	2	F	Essential correction of tests 11.2 and 11.3	10.2.0
CT-53	CT-53	CP-110718	0162	1	F	Essential correction of test 5.2.2	10.2.0
						Correction of formatting of table 5-2	10.2.1
CT-54	CT-54	CP-110903	0163	1	F	Essential correction of the phonebook and MMS tests applicability	10.3.0
CT-54	CT-54	CP-110903	0164	1	F	Deletion of test 9.1.6 (Access Point Name Control List handling for terminals not supporting ACL connected to E-UTRAN/EPC)	10.3.0
CT-55	CT-55	CP-120150	0165	1	F	Essential correction of 5.2.2	10.4.0
CT-56	CT-56	CP-120390	0166		F	Correction of test 6.1.16	10.5.0
CT-56	CT-56	CP-120390	0168	1	F	Test case applicability modification of test 8.2.3 for terminals with large SMS storage capabilities	10.5.0
CT-56	CT-56	CP-120391	0167		F	Changes in test sequences for ACL in E-UTRAN	10.5.0
SP-57	SP-57					Automatic upgrade to Rel-11	11.0.0
CT-58	CT-58	CP-120874	0172	1	F	Essential correction on TC 11.1	11.1.0
CT-58	CT-58	CP-120874	0173	1	F	Essential correction on TC 11.2	11.1.0
CT-58	CT-58	CP-120874	0171	1	F	Essential correction on the applicability for TC 5.2.2	11.1.0
CT-58	CT-58	CP-120874	0170	3	F	Change of ACL test sequence	11.1.0
CT-60	CT-60	CP-130368	0174	7	B	Introduction of Operator CSG lists and CSG list display control related TCs for E-UTRA and UTRA (Rel-9)	11.2.0
CT-60	CT-60	CP-130368	0176	2	B	Introduction of Allowed CSG Lists related TCs for UTRA (Rel-8)	11.2.0
CT-62	CT-62	CP-130798	0179		F	Removal of the unused applicability condition C030	11.3.0
CT-62	CT-62	CP-130789	0180	3	B	Introduction of EPS NAS Security Context Storage test case	11.3.0
CT-62	CT-62	CP-130798	0181	1	F	Essential correction for Applicability table related to new CSG tests	11.3.0
CT-63	CT-63	CP-140170	0182		D	Clarification of call types to be used inside test case 8.4.	11.4.0
CT-63	CT-63	CP-140170	0183	1	F	Corrections to test case 10.1.2, 10.1.4 and 10.1.5	11.4.0
CT-63	CT-63	CP-140170	0186	1	F	Corrections to the applicabilities of CSG test cases	11.4.0
CT-63	CT-63	CP-140170	0184	1	F	Corrections to test case 10.1.8 and 10.2.2	11.4.0
CT-63	CT-63	CP-140170	0185	1	F	Corrections to test case 10.2.1, 10.2.2 and 10.2.3	11.4.0
CT-65	CT-65	CP-140706	0187		F	Correction to the text description of default value in EFOPLMNwAcT	11.5.0
CT-65	CT-65	CP-140706	0190		F	Corrections to the test sequence of TC 6.4.3 and 6.4.4	11.5.0
SP-65	SP-65					Automatic upgrade to Rel-11	12.0.0
CT-66	CT-66	CP-140962	0192		F	Default GUTI correction	12.1.0
CT-66	CT-66	CP-140962	0191	1	F	Removal of TC 9.1.5	12.1.0
CT-66	CT-66	CP-140962	0188	2	F	Update of references to ETSI TS 102 221 and addition of Rel-12 applicability	12.1.0
CT-67	CT-67	CP-150161	0194		F	Corrections to test case 7.1.1	12.2.0
CT-67	CT-67	CP-150160	0196		F	Corrections to test case 7.1.6 and 10.2.3	12.2.0
CT-67	CT-67	CP-150161	0197	1	F	Corrections to test case 8.2.4	12.2.0
CT-67	CT-67	CP-150161	0195	1	F	Corrections to test case 7.1.3, 7.2.2, 7.2.3, 7.3.1, 7.3.2, 7.4.1 and 7.4.2	12.2.0
CT-67	CT-67	CP-150161	0198	2	F	Essential correction on EFEPSNSC (EPS NAS Security Context) defined for E-UTRAN/EPC UICC	12.2.0
CT-68	CT-68	CP-150161	0194		F	Corrections to test case 7.1.1	12.3.0
CT-69	CT-69	CP-150564	0200	2	C	Relaxing the mandatory clause and making features optional	13.0.0
CT-70	CT-70	CP-150828	0206		C	Essential correction of initial conditions in test case 10.1.5 and 10.1.6.	13.1.0
CT-70	CT-70	CP-150828	0202	1	B	Addition of Rel-13 column to applicability table	13.1.0
CT-70	CT-70	CP-150828	0207	1	F	Essential corrections on test cases 5.1.1 and 5.1.2	13.1.0
CT-70	CT-70	CP-150828	0208	1	F	Essential corrections on test case 7.2.3	13.1.0

Change history							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
CT-70	CT-70	CP-150828	0205	2	F	Essential corrections to test case 7.1.1	13.1.0
CT-70	CT-70	CP-150828	0203	1	D	Editorial corrections in CSG related test cases	13.1.0
CT-70	CT-70	CP-150828	0204	1	C	Additional check on UE after manual CSG attempt rejected	13.1.0
CT-70	CT-70	CP-150828	0210		C	Clarification on acceptance criteria on EF-ACSG in test case 10.1.3.	13.1.0
CT-71	CT-71	CP-160144	0212	1	F	Essential correction on applicability table for test case execution in GERAN	13.2.0
CT-71	CT-71	CP-160144	0213	1	F	Essential correction to test case for NAS security context parameter handling	13.2.0
CT-71	CT-71	CP-160144	0211	1	B	Introduction of new test cases on Non-Access Stratum (NAS) configuration	13.2.0
CT-71	CT-71	CP-160145	0214	1	C	Making Local Phone Book Optional	13.2.0
CT-72	CT-72	CP-160346	0216		F	Modification of TAC value in the Acceptance criteria of test case 10.1.2	13.3.0
CT-72	CT-72	CP-160346	0217	1	D	Editorial corrections to test case 12.2	13.3.0
CT-72	CT-72	CP-160346	0218	1	B	Introduction of new test cases on Non-Access Stratum (NAS) configuration	13.3.0
CT-72	CT-72	CP-160346	0221	1	F	Correction to test cases updating the EF-ACSG	13.3.0
CT-72	CT-72	CP-160349	0219	1	C	Making phonebook support optional for MEs with reduced feature capabilities	13.3.0
CT-73	CT-73	CP-160547	0222		B	Introduction of new test cases on Non-Access Stratum (NAS) configuration	13.4.0
CT-73	CT-73	CP-160547	0223		F	Correction of Acceptance criteria of test case 12.4	13.4.0
CT-74	CT-74	CP-160791	225		F	Essential correction to test case for E-UTRA Disabling Allowed for EMM cause #15	13.5.0
CT-74	CT-74	CP-160791	232		F	Condition for test case for EFNASCONFIG - Override NAS signalling low priority	13.5.0
CT-74	CT-74	CP-160791	234		F	Applicability of test case for EFNASCONFIG - SM_RetryWaitTime	13.5.0
CT-74	CT-74	CP-160791	235		F	Condition for Verifying Timer T3245 Behaviour test case	13.5.0
CT-74	CT-74	CP-160791	237		F	Correction of Applicability for test case 9.1.4	13.5.0
CT-74	CT-74	CP-160791	231	1	F	Condition for test case for EFNASCONFIG - Override Extended Access Barring	13.5.0
CT-75	CT-75	CP-170231	0236	4	B	Introduction of new test executions for NB-IoT UE implementation	13.6.0
CT-75	CT-75	CP-170231	0239	1	B	Modification of some E-UTRAN test cases under cl. 7.1/3/4 to cover NB-IoT	13.6.0
CT-75	CT-75	CP-170231	0240	1	B	Modification of test cases under cl. 11 and 8.5 to cover NB-IoT	13.6.0
CT-75	CT-75	CP-170231	0238	3	B	Introduction of NB-IoT Applicability to some LTE test cases and addition of a new test case to cl. 8.2	13.6.0
CT-75	CT-75	CP-170166	0226	2	F	Removal of test case for EFNASCONFIG – Extended Access Barring	13.6.0
CT-75	CT-75	CP-170166	0230	3	F	Removal of test case for EFNASCONFIG – NMO I Network Mode of Operation I handling	13.6.0
2017-03	2017-03	SA-75	-	-	-	Update to Rel-14 version (MCC)	14.0.0
CT-76	CT-76	CP-171160	0243	-	B	Addition of new test case 5.2.X	14.1.0
CT-76	CT-76	CP-171166	0228	3	F	Removal of test case for EFNASCONFIG - Minimum Periodic Search Timer	14.1.0
CT-76	CT-76	CP-171166	0229	3	F	Removal of test case for EFNASCONFIG - NAS Signalling Priority	14.1.0
CT-76	CT-76	CP-171166	0233	3	F	Removal of test case for EFNASCONFIG - SM_RetryAtRATChange	14.1.0
CT-76	CT-76	CP-171166	0224	3	F	Removal of test case for Attach with IMSI	14.1.0
CT-76	CT-76	CP-171166	0244	-	F	Correction to test case 11.4 for EPS NAS security context Storage	14.1.0
CT-76	CT-76	CP-171166	0242	-	F	Added applicability for Rel.14 terminals	14.1.0
CT-76	CT-76	CP-171166	0224	4	F	Removal of test case for Attach with IMSI	14.1.0
CT-76	CT-76	CP-171166	0245	-	D	Editorial corrections to clause 12.5	14.1.0
2017-09	CT-77	CP-172065	0250	3	F	Correction of handling NAS reject messages	14.2.0
2017-09	CT-77	CP-172064	0252	1	F	Correction of wrong implementation of CRs in TS 31.121	14.2.0
2017-09	CT-77	CP-172065	0253	1	B	Addition of new test case on handling non-integrity protected NAS reject messages	14.2.0
2017-12	CT-78	CP-173150	0254	-	F	Fixed typos in table B.1	14.3.0
2017-12	CT-78	CP-173150	0255	2	F	Fixed conditions for test cases for terminals that supports only E-UTRA	14.3.0
2017-12	CT-78	CP-173150	0256	2	B	Introduction of test cases for UICC interface during PSM and eDRX	14.3.0
2018-03	CT-79	CP-180129	0257	1	F	Remove references to hardcoded timers for testcases for UICC interface during PSM and eDRX	14.4.0
2018-03	CT-79	CP-180129	0258	1	F	Correction of implementation error in applicability table	14.4.0
2018-03	CT-79	CP-180129	0259	1	F	Minor corrections to testcases for UICC interface during PSM and eDRX	14.4.0
2018-03	CT-79	CP-180129	0260	-	F	Move PSM/eDRX procedure selection decision to the network	14.4.0
2018-03	CT-79	CP-180129	0261	-	F	Correction to test case 11.4 for EPS NAS security context Storage	14.4.0
2018-06	CT-80	CP-181157	0262	1	B	Introduction of new test cases for user and operator controlled PLMN selector handling	14.5.0

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2018-06	CT80	CP-181151	0263	-	F	Applicability modification of TC 7.2.6, 7.2.7 and 12.10	14.5.0
2018-06	CT80	CP-181151	0264	-	F	Addition of logical description of EFUMPC	14.5.0
2018-06	SA80					Automatic upgrade to Rel-15	15.0.0
2018-09	CT#81	CP-182188	0265	2	D	Editorial corrections to TC 13.2 and cl. 3.8	15.1.0
2018-09	CT#81	CP-182188	0266	-	F	Modification of test procedures under cl. 13, and cl. 14	15.1.0
2018-09	CT#81	CP-182188	0267	1	F	Correction of wrong implementation of CR#0262	15.1.0
2018-09	CT#81	CP-182190	0268	1	F	Correction to the applicability table	15.1.0
2018-09	CT#81	CP-182190	0269	1	F	TS 31.121: Adding applicability for Rel.15 terminals	15.1.0
2018-12	CT#82	CP-183142	0271	-	F	Correction of typos in 7.1.8	15.2.0
2018-12	CT#82	CP-183139	0272	-	F	Extend the scope of 31.121 to cover 5G aspects	15.2.0
2018-12	CT#82	CP-183142	0273	1	F	Modification of test requirements for UICC re-activation/re-initialisation during PSM and eDRX	15.2.0
2019-03	CT#83	CP-190046	0274	-	F	Applicability update of TC 7.2.7	15.3.0
2019-06	CT#84	CP-191014	0276	-	F	Correction to test case 10.1.6	15.4.0
2019-06	CT#84	CP-191014	0275	1	F	Correction to test case 11.4	15.4.0
2019-06	CT#84	CP-191017	0277	1	B	Introduction of Handling subscription identifier privacy for 5G related test cases	15.4.0
2019-09	CT#85	CP-192018	0283	2	B	Introducing 5G-NG TCs 5.3.1 and 5.3.2 for UE identification by SUCI during initial registration	15.5.0
2019-09	CT#85	CP-192017	0278	1	F	Corrections to 5G-NG TC 5.3.4	15.5.0
2019-09	CT#85	CP-192017	0279	2	F	Corrections to 5G-NG TC 5.3.5	15.5.0
2019-09	CT#85	CP-192017	0280	2	F	Corrections to 5G-NG TC 5.3.6	15.5.0
2019-09	CT#85	CP-192017	0281	1	F	Update of 5G-NG TC 5.3.8	15.5.0
2019-09	CT#85	CP-192017	0282	1	F	Corrections to 5G-NG TC 5.3.9	15.5.0
2019-12	CT#86	CP-193073	0294	1	F	Improvement of definitions	15.6.0
2019-12	CT#86	CP-193074	0285	2	B	Introducing SUCI calculation by USIM testcase 5.3.3	15.6.0
2019-12	CT#86	CP-193074	0286	2	B	Introducing SUCI calculation by USIM testcase 5.3.7	15.6.0
2019-12	CT#86	CP-193074	0287	2	B	Introducing Universal Access Control testcase 5.4.1	15.6.0
2019-12	CT#86	CP-193074	0288	2	B	Introducing Universal Access Control test case 5.4.2	15.6.0
2019-12	CT#86	CP-193073	0300	-	D	Correction of clause numbering in TC 5.4.2	15.6.0
2019-12	CT#86	CP-193074	0289	1	B	Enhance SUCI calculation testcase 5.3.5 to ensure UE uses correct identity amongst the multiple available	15.6.0
2019-12	CT#86	CP-193074	0290	1	F	Correction of EFIMSI for the default 5G-NR UICC	15.6.0
2019-12	CT#86	CP-193074	0291	1	F	Correction of TC 5.3.1	15.6.0
2019-12	CT#86	CP-193074	0292	1	F	Correction of TC 5.3.2	15.6.0
2019-12	CT#86	CP-193074	0293	-	F	Update of case applicability for TC 5.3.x	15.6.0
2019-12	CT#86	CP-193074	0295	2	F	Align wording of TC 5.3.1 with 3GPP TS 31.102	15.6.0
2019-12	CT#86	CP-193074	0296	3	F	Align wording of TC 5.3.2 with 3GPP TS 31.102	15.6.0
2019-12	CT#86	CP-193074	0297	3	F	Align wording of TC 5.3.7 with 3GPP TS 31.102	15.6.0
2019-12	CT#86	CP-193074	0298	2	F	Adding 5GS_Ph1 test cases to Applicability Table where missed in the initial CR	15.6.0
2019-12	CT#86	CP-193074	0299	1	D	Addition of 5G specific abbreviations	15.6.0
2019-12	CT#86	CP-193074	0302	1	B	Introducing Universal Access Control test case 5.4.5	15.6.0
2019-12	CT#86	CP-193074	0303	1	B	Introducing Universal Access Control test case 5.4.8	15.6.0
2019-12	CT#86	CP-193074	0304	1	B	Introducing Universal Access Control test case 5.4.9	15.6.0
2019-12	CT#86	CP-193074	0305	1	B	Introducing test case 5.3.11, SUCI calculation by ME using Profile A	15.6.0
2020-03	CT#87e	CP-200084	0306	2	B	Introduction of Authentication procedure and NAS security context handling for 5G test cases	15.7.0
2020-03	CT#87e	CP-200084	0307	2	B	Introducing Universal Access Control test case 5.4.3	15.7.0
2020-03	CT#87e	CP-200084	0308	1	F	Title update of test case 5.3.10	15.7.0
2020-03	CT#87e	CP-200084	0309	2	F	Update of default content of EFSUCI_Calc_Info	15.7.0
2020-03	CT#87e	CP-200084	0310	1	F	Order update of Protection Scheme Identifier in TC 5.3.11	15.7.0
2020-03	CT#87e	CP-200084	0314	-	F	Correct the length of 'A1' for EFSUCI_Calc_Info in 4.9.4	15.7.0
2020-03	CT#87e	CP-200084	0315	-	B	Introduction test case – 5.3.x, UE identification by SUCI during initial registration, SUCI calculation by USIM using profile A	15.7.0
2020-03	CT#87e	CP-200084	0316	-	F	Correct the length of 'A1' for EFSUCI_Calc_Info in 5.3.1	15.7.0
2020-03	CT#87e	CP-200084	0317	1	B	Introducing a test case, SUCI calculation by ME using null scheme – no Protection Scheme Identifier provisioned in the USIM	15.7.0
2020-03	CT#87e	CP-200084	0318	1	B	Introducing a test case, SUCI calculation by ME using null scheme – no Home Network Public Key for supported protection scheme provisioned in the USIM	15.7.0
2020-03	CT#87e	CP-200084	0319	-	B	Introducing a test case, SUCI calculation by ME using null scheme with the E-UTRAN/EPC UICC	15.7.0
2020-03	CT#87e	CP-200084	0320	-	B	Introducing Universal Access Control test case 5.4.6	15.7.0
2020-03	CT#87e	CP-200084	0321	2	B	Introducing test case, SUCI calculation by ME using the lower priority protection scheme when the higher priority protection scheme is not supported by the ME	15.7.0
2020-06	CT#88e	CP-201143	0311	3	C	Correction of UICC interface during eDRX tests	15.8.0

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2020-06	CT#88e	CP-201143	0343	2	F	Correction of IMSI in the default 5G-NR UICC	15.8.0
2020-06	CT#88e	CP-201151	0312	4	D	Correction of incorrectly coded EF_ACC bytes in TC 5.4.9	15.8.0
2020-06	CT#88e	CP-201151	0313	2	D	Correction of incorrect numbering in TC 5.4.1	15.8.0
2020-06	CT#88e	CP-201151	0322	1	F	Adding a default UICC profile to the initial conditions of 5.4.x test cases	15.8.0
2020-06	CT#88e	CP-201151	0323	1	B	Introduction test case – 5.5.1 – Display of 5G Operator PLMN name from USIM	15.8.0
2020-06	CT#88e	CP-201151	0324	1	B	Introduction test case – 5.5.2 – Display of 5G Operator PLMN name from ME	15.8.0
2020-06	CT#88e	CP-201151	0325	1	C	Correction of Initial conditions of TC 5.4.3 and 5.4.6	15.8.0
2020-06	CT#88e	CP-201151	0326	2	B	Introduction of test 5.4.4 - UAC - Access Identity 1 – no MPS indication by USIM and SUPI is changed	15.8.0
2020-06	CT#88e	CP-201151	0327	2	B	Introduction of test 5.4.7 - UAC - Access Identity 2 – no MCS indication by USIM and SUPI is changed	15.8.0
2020-06	CT#88e	CP-201151	0328	3	B	Introduction of tests 15.1.1 to 15.1.4 - Authentication procedure for EAP-AKA'	15.8.0
2020-06	CT#88e	CP-201151	0330	3	F	Clarification to test cases 5.3.5	15.8.0
2020-06	CT#88e	CP-201151	0337	1	F	Correction test case – 5.3.16 – SUCI calculation by ME using the lower priority protection scheme when the higher priority protection scheme is not supported by the ME	15.8.0
2020-06	CT#88e	CP-201151	0338	1	F	Correction of EF_SUCI_Calc_Info in the 5G-NR UICC	15.8.0
2020-06	CT#88e	CP-201151	0339	-	F	Correction of EF_SUCI_Calc_Info in test case 5.3.1	15.8.0
2020-06	CT#88e	CP-201151	0340	-	F	Correction of the Home Network Public Key used in test case 5.3.3	15.8.0
2020-06	CT#88e	CP-201151	0341	-	F	Correction of the Home Network Public Key 2 used in test case 5.3.11	15.8.0
2020-06	CT#88e	CP-201151	0342	-	B	Introduction new test case 5.3.x - SUCI calculation by ME using Profile B with compressed Home Network Public Key	15.8.0
2020-06	CT#88e	CP-201151	0344	2	F	Clarification to several test cases	15.8.0
2020-06	CT#88e	CP-201151	0345	-	F	Correction to Test Case 5.3.4	15.8.0
2020-06	CT#88e	CP-201151	0347	1	F	Correction test case – 5.3.9 UE identification by 5G-GUTI – Last Registered TAI stored by ME	15.8.0
2020-06	CT#88e	CP-201151	0348	1	F	Correction test case – 5.3.10 UE identification after SUPI is changed	15.8.0
2020-06	CT#88e	CP-201151	0349	1	F	Correction to testcase 5.3.8: UE identification by 5G-GUTI – Last Registered TAI stored on USIM	15.8.0
2020-06	CT#88e	CP-201145	0329	2	F	Update the scope of 31.121 to cover 5G aspects	15.8.0
2020-06	CT#88e	CP-201145	0346	1	F	Correction to handling of 5G timers in 5G test cases	15.8.0
2020-06	CT#88e	CP-201333	0332	6	C	Correction of minor issues in 15.2.x test cases	15.8.0
2020-07	CT#88e	-	-	-	-	Update to Rel-16 version (MCC)	16.0.0
2020-09	CT#89e	CP-202134	0365	1	F	Corrections to authentication procedure for EAP-AKA' test cases	16.1.0
2020-09	CT#89e	CP-202134	0366	1	F	Corrections to authentication procedure for 5G AKA test cases	16.1.0
2020-09	CT#89e	CP-202134	0368	1	F	Modify Test Case 5.3.7	16.1.0
2020-09	CT#89e	CP-202134	0353	1	F	Update of test case 5.3.5	16.1.0
2020-09	CT#89e	CP-202134	0354	1	F	Update of test case 5.3.6	16.1.0
2020-09	CT#89e	CP-202134	0355	2	F	Update of test case 5.3.9	16.1.0
2020-09	CT#89e	CP-202134	0356	1	F	Update of test case 5.4.x	16.1.0
2020-09	CT#89e	CP-202134	0357	1	F	Update of test case 5.5.x	16.1.0
2020-09	CT#89e	CP-202134	0370	1	F	Correction Test case – 5.3.15 – SUCI calculation by ME using null scheme with the E-UTRAN/EPC UICC	16.1.0
2020-09	CT#89e	CP-202134	0373	2	B	Introducing Universal Access Control test case 5.4.11 for Operator-defined Access categories	16.1.0
2020-09	CT#89e	CP-202134	0375	2	B	Introducing Universal Access Control test case 5.4.12 for Operator-defined Access categories	16.1.0
2020-09	CT#89e	CP-202134	0377	-	F	Correction to coding of AC 14 in the Universal Access Control test case 5.4.9	16.1.0
2020-09	CT#89e	CP-202134	0379	1	F	Clarification to test case 5.3.1 SUCI calculation by ME using null scheme	16.1.0
2020-09	CT#89e	CP-202134	0371	1	B	Introducing Universal Access Control test case 5.4.10 for Operator-defined Access categories	16.1.0
2020-12	CT#90e	CP-203090	0382	-	A	Correction to Test Case 5.3.12	16.2.0
2020-12	CT#90e	CP-203090	0384	-	F	Corrections to the Rel-16 applicability table	16.2.0
2020-12	CT#90e	CP-203090	0394	-	A	Corrections to UAC ODAC TC 5.4.x	16.2.0
2020-12	CT#90e	CP-203090	0396	-	A	Correction to Test Case 5.3.8	16.2.0
2020-12	CT#90e	CP-203090	0441	-	F	Corrections to 5.3.7 (exceptions noted in Initial Conditions) - Rel 16	16.2.0
2020-12	CT#90e	CP-203091	0386	-	A	Corrections to CSG TC 10.2.1	16.2.0
2020-12	CT#90e	CP-203091	0388	-	A	Corrections to PLMN TC 7.2.3	16.2.0
2020-12	CT#90e	CP-203091	0390	-	A	Corrections to NAS security TC 11.x	16.2.0
2020-12	CT#90e	CP-203091	0392	-	A	Correction of EF_EPSNSC in clause 4.4.8 and 4.8.8	16.2.0
2020-12	CT#90e	CP-203092	0439	4	B	Test case covering Support for URSP by USIM	16.2.0
2021-03	CT#91e	CP-210080	0447	-	D	Editorial correction to mnemonic used in C058	16.3.0
2021-03	CT#91e	CP-210081	0443	-	C	Clarification of a procedure text in test case 11.4	16.3.0

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2021-03	CT#91e	CP-210081	0444	-	F	Correction of test case 13.4	16.3.0
2021-03	CT#91e	CP-210081	0445	-	D	Correction of a reference	16.3.0
2021-03	CT#91e	CP-210081	0442	1	F	Correction to Rel-16 NR TC 5.5.1 and 5.5.2	16.3.0
2021-03	CT#91e	CP-210085	0446	1	D	Usage of inclusive language in TC 10.1.1 and 10.1.2	16.3.0
2021-06	CT#92e	CP-211095	0449	-	F	Corrections of TAC for UAC test cases	16.4.0
2021-06	CT#92e	CP-211095	0450	-	F	Update of applicability condition C057 and C058	16.4.0
2021-06	CT#92e	CP-211095	0451	-	F	Update test procedure of TC 15.1.1 and 15.2.1	16.4.0
2021-06	CT#92e	CP-211095	0452	-	F	Corrections to URSP TC 16.1.1	16.4.0
2021-06	CT#92e	CP-211095	0454	-	F	Correction of veridct for UAC TC 5.4.9 Seq 1.10	16.4.0
2021-06	CT#92e	CP-211095	0458	-	D	Update of test case 6.1.13	16.4.0
2021-06	CT#92e	CP-211095	0459	1	D	Update of test case 6.1.11	16.4.0
2021-06	CT#92e	CP-211095	0457	1	D	Update of test case 6.1.10	16.4.0
2021-06	CT#92e	CP-211095	0455	1	D	Update of test case 5.4.11	16.4.0
2021-06	CT#92e	CP-211095	0456	1	D	Update of test case 5.4.12	16.4.0
2021-06	CT#92e	CP-211100	0453		D	Inclusive language review on 3GPP TS 31.121	16.4.0
2021-09	CT#93e	CP-212085	0468	-	F	Update of acceptance criteria in TC 15.1.1 and 15.2.1	16.5.0
2021-09	CT#93e	CP-212085	0462	2	B	Introduction of an URSP support by ME test case	16.5.0
2021-09	CT#93e	CP-212085	0460		F	Corrections of TAC for UAC TC 5.4.2	16.5.0
2021-09	CT#93e	CP-212086	0467	-	D	Update of some test case for PIN handling	16.5.0
2021-09	CT#93e	CP-212086	0466	-	F	Correction of TC 5.4.3	16.5.0
2021-09	CT#93e	CP-212086	0464	1	F	Correction of TC 15.2.4	16.5.0
2021-09	CT#93e	CP-212086	0463	-	F	Correction of TC 15.1.4	16.5.0
2021-09	CT#93e	CP-212086	0461	-	D	Correction of typos in 3GPP TS 31.121	16.5.0
2021-12	CT#94e	CP-213164	0469	3	B	Introducing 3 new test sequences in the UAC test case 5.4.10 for Operator-defined Access Categories	16.6.0
2021-12	CT#94e	CP-213164				Introducing two Access Category 8 UAC test sequences for the test case 5.4.2	16.6.0
2021-12	CT#94e	CP-213164	0470	1	B		
2021-12	CT#94e	CP-213164	0471	2	F	Correction of TC 5.4.3	16.6.0
2021-12	CT#94e	CP-213164	0475	-	F	Correction of tests 16.1.1 and 16.1.2	16.6.0
2021-12	CT#94e	CP-213164	0476	-	D	Correction of DNN names in TC 5.4.11 and 5.4.12	16.6.0
2021-12	CT#94e	CP-213164	0477	-	D	Editorial corrections to TC 8.2.5 and 8.2.6	16.6.0
2021-12	CT#94e	CP-213163	0472	1	F	Correction to the TCs 15.1.2 and 15.2.2	16.6.0
2021-12	CT#94e	CP-213163	0473	1	D	Correction of TCs 15.1.4 and 15.2.4	16.6.0
2022-03	CT#95e	CP-220126	0478	-	F	Correction of Annex tables for UAC TC	16.7.0
2022-03	CT#95e	CP-220126	0479	-	F	Update of acceptance criteria in TC 15.1.1 and 15.2.1	16.7.0
2022-03	CT#95e	CP-220126	0483	2	F	Correction for the ODAC TCs 5.4.10, 5.4.11, and 5.4.12	16.7.0
2022-03	CT#95e	CP-220127	0480	-	F	Correction to TC 15.2.4	16.7.0
2022-03	CT#95e	CP-220127	0481	-	F	Correction to TC 15.1.4	16.7.0
2022-03	CT#95e	CP-220127	0482	-	F	Adding unimplemented changes to TC 5.4.10	16.7.0
2022-06	CT#96	CP-221162	0486	1	F	Correction for the ODAC TCs 5.4.10, 5.4.11, and 5.4.12	16.8.0
2022-06	CT#96	CP-221162	0487	1	F	Correction to TC 5.5.2	16.8.0
2022-06	CT#96	CP-221165	0484	1	D	Correction of incorrect references in tests	16.8.0
2022-06	CT#96	CP-221165	0489	-	F	SSC Mode corrections for 16.x URSP test cases	16.8.0
2022-09	CT#97e	CP-222076	0490	2	F	Correction on the range of timer T3245 duration	16.9.0
2022-09	CT#97e	CP-222079	0493	-	B	Test Cases to cover USIM with non-IMSI SUPI Type	16.9.0
2022-09	CT#97e	CP-222079	0494	-	D	Correction to Annex A and Annex B	16.9.0
2022-09	CT#97e	CP-222082	0491	2	F	Alignment of EF_UST, EF_IST and EF_EST descriptions in 4.x clauses	16.9.0
2022-09	CT#97e	CP-222082					
2022-09	CT#97e	CP-222082	0492	-	F	Correction of TC 5.4.10	16.9.0
2022-09	CT#97e	CP-222082	0495		F	Corrections to clause 4.9	16.9.0
2022-12	CT#98e	CP-223079	0496	-	F	Correction of case number and applicability of TC 5.6.1	16.10.0
2022-12	CT#98e	CP-223079	0497	2	F	Correction of default 5G-NR UICC non-IMSI SUPI Type	16.10.0
2022-12	CT#98e	CP-223079	0498	-	F	Coding correction of 4.9.5 EFRouting_Indicator	16.10.0
2022-12	CT#98e	CP-223079	0499	1	F	Correction of TC 16.1.2	16.10.0
2022-12	CT#98e	CP-223079	0503	-	D	Editorial Correction in TC 5.1.8	16.10.0
2022-12	CT#98e	CP-223081	0500	4	B	Test Case to cover SUCI calculation by USIM in a non-IMSI SUPI type format and ECIES Profile A	16.10.0
2022-12	CT#98e	CP-223081				Test Case to cover SUCI calculation by USIM in a non-IMSI SUPI type format and ECIES Profile B	16.10.0
2022-12	CT#98e	CP-223081	0502	1	B	Test Case to cover SUCI calculation by USIM in a non-IMSI SUPI when SUPI is changed	16.10.0
2022-12	CT#98e	CP-223081					
2023-03	CT#99	CP-230101	0505	2	F	Correction to the AC8 test sequences in 5.4.x UAC TCs	16.11.0
2023-03	CT#99	CP-230102	0504	-	D	Correct references to a non-existent 5G-NG UICC	16.11.0
2023-03	CT#99	CP-230102	0506	-	D	Correction of EF_AD parameters	16.11.0
2023-06	CT#100	CP-231099	0511	0	D	Correction to Clause 5.4	16.12.0
2023-06	CT#100	CP-231099	0512	2	B	Addition of TCs under clause 15 to allow testing of the storage of the SOR counter and the UE parameter update counter if service n133 in EFUST is available	16.12.0
2023-06	CT#100	CP-231099					
2023-06	CT#100	CP-231099	0508	2	F	Corrections to TC 5.6.1, 5.6.2, 5.6.3, 5.6.4	16.12.0

Change history							
Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
2023-06	CT#100	CP-231099	0509	1	B	Introducing new TCs for SUCI calculation by ME using Profile A, B - SUPI Type in NAI format (non-IMSI SUPI)	16.12.0
2023-06	CT#101	CP-232136	0519	1	B	Introduction of TCs to allow testing NAS security context storage in multiple registration	16.13.0
2023-09	CT#101	CP-232140	0516	4	B	New Applicability table for Rel-17 of TS 31.121	17.0.0
2023-09	CT#101	CP-232141	0515	2	B	17.1 Introducing new Test case for CAG list handling	17.0.0
2023-12	CT#102	CP-233098	0520		F	Correction to Table B.1	17.1.0
2023-12	CT#102	CP-233098	0524	1	F	Applicability table correction	17.1.0
2023-12	CT#102	CP-233098	0521	1	F	Correction to default 5G-NR UICC Profiles	17.1.0
2023-12	CT#102	CP-233098	0525	2	B	Adding, updating, deleting FPLMN to the forbidden PLMN list when accessing satellite NG-RAN, and recognises the priority order of the User controlled PLMN selector list using an ACT preference GSM, UTRAN, E-UTRAN and NG-RAN versus satellite NG-RAN.	17.1.0
2023-12	CT#102	CP-233099	0522	1	F	Correction of test 15.2.5	17.1.0
2024-01	CT#102					Editorial corrections in "31121-h11_s03_6-s03_8am"	17.1.1
2024-03	CT#103	CP-240134	0528	-	D	Correction of clause numbering in test 15.2A.1	17.2.0
2024-03	CT#103	CP-240134	0529	-	F	Correction of test case 17.1.1	17.2.0
2024-03	CT#103	CP-240134	0533	-	F	Correction to Table B.1	17.2.0
2024-03	CT#103	CP-240134	0534	-	F	Correction to Default Rel-16 and CAG NR UICC contents	17.2.0
2024-03	CT#103	CP-240134	0530	3	C	Correction to TCs 15.1A.1, 15.2A.2 and 15.2.5	17.2.0
2024-03	CT#103	CP-240141	0523	1	F	Correction to Unified Access Control Testcases 5.4.x	17.2.0
2024-03	CT#103	CP-240141	0535	1	F	Correction 31.121_15.2.5	17.2.0
2024-03	CT#103	CP-240141	0537	2	F	31.121 NG-SS with IMS capabilities	17.2.0
2024-03	CT#103	CP-240141	0536	3	B	3GPP 31.121 new USIM TCs for non-3GPP access 5G Authentication over N3IWF	17.2.0
2024-03	CT#103	CP-240144	0539	2	B	UE recognising the search period of the Higher priority PLMN – NG-RAN	17.2.0
2024-03	CT#103	CP-240144	0540	1	B	UE recognising Multiplier Coefficient for Higher Priority PLMN search – NG-RAN satellite access	17.2.0
2024-06	CT#104	CP-241211	0541		F	Correction to NR NTN TC 7.1.9	17.3.0
2024-06	CT#104	CP-241211	0542		F	Correction to NR NTN TC 7.1.10	17.3.0
2024-06	CT#104	CP-241211	0543		F	Correction to NR NTN TC 7.1.11	17.3.0
2024-06	CT#104	CP-241211	0544		F	Correction to NR NTN TC 7.2.10 to 7.2.14	17.3.0
2024-06	CT#104	CP-241211	0545		F	Correction to NR NTN TC 7.4.6	17.3.0
2024-06	CT#104	CP-241211	0546		F	Correction to NR TC 7.4.7	17.3.0
2024-06	CT#104	CP-241211	0547		C	Applicability extension for Redcap UEs in TS 31.121	17.3.0
2024-06	CT#104	CP-241211	0550	1	F	Correction of Access Technology values in EFPLMNwACT for 5G-NR UICC tests	17.3.0
2024-06	CT#104	CP-241211	0548	1	F	Correction to TC 15.2.5	17.3.0
2024-09	CT#105	CP-242078	0559		D	Incorrect clause in spec - Rel 17	17.4.0
2024-09	CT#105	CP-242078	0558	1	F	Update of references to ETSI specifications	17.4.0
2024-09	CT#105	CP-242081	0552	1	B	Recognition of OPLMNwACT selection list priority order when accessing NG-RAN	17.4.0
2024-09	CT#105	CP-242081	0553	1	B	Recognition of OPLMNwACT selection list priority order when accessing satellite NG-RAN	17.4.0
2024-09	CT#105	CP-242081	0555	7	B	Introduce a new 31.121 TC for NAS configuration "No E-UTRA Disabling In 5GS"	17.4.0
2024-09	CT#105	CP-242088	0551	1	B	SSIM Test Cases	18.0.0
2024-12	CT#106	CP-243150	0565	2	F	Correction of default 5G-NR UICC contents Rel-17	18.1.0
2024-12	CT#106	CP-243150	0573		F	Correction to Testcase 7.4.7 with EF-PLMNwACT	18.1.0
2024-12	CT#106	CP-243153	0562		D	Improvement of the logical description of the 5G-GUTI	18.1.0
2024-12	CT#106	CP-243159	0572		F	Correction to Testcase 7.2.14	18.1.0
2024-12	CT#106	CP-243159	0570	2	B	Definition of NG-RAN UICC supporting Rel-18 features - USIM	18.1.0
2024-12	CT#106	CP-243159	0561	1	B	Testcase for Operator Controlled Signal threshold verification for IoT device	18.1.0
2024-12	CT#106	CP-243159	0569	3	F	Correction in default value of service n°127 in the USIM Service Table in clause 7.4.6 and 7.4.7	18.1.0
2024-12	CT#106	CP-243159	0563	3	B	SOR-CMCI PDU session in USIM	18.1.0
2024-12	CT#106	CP-243164	0571		D	Addition of FPLMN handling test cases for IoT NTN	18.1.0
2024-12	CT#106	CP-243164	0566	1	B	Addition of User controlled PLMN selector handling test cases for IoT NTN	18.1.0
2024-12	CT#106	CP-243164	0567	1	B	Addition of Operator controlled PLMN selector handling test cases for IoT NTN	18.1.0
2025-03	CT#107	CP-250059	0578	2	B	Introducing new TCs for SUCI 5G NSWO calculation by USIM using Profiles A and B	18.2.0
2025-03	CT#107	CP-250061	0575		F	Editorial correction to the Abbreviations	18.2.0
2025-03	CT#107	CP-250061	0577		F	Correction to clause numbers of UAC TC	18.2.0
2025-03	CT#107	CP-250068	0574		F	Correction of tests not correctly using HPLMNwACT	18.2.0
2025-03	CT#107	CP-250068	0585	3	B	Tests on S-NSSAI Authentication status verification procedure	18.2.0

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Date	Meeting	TDoc	CR	R ev	Cat	Subject/Comment	New version
2025-03	CT#107	CP-250069	0576		F	Correction to applicability condition C71	18.2.0
2025-03	CT#107	CP-250069	0581		B	Addition of FPLMN handling test cases for IoT NTN	18.2.0
2025-03	CT#107	CP-250069	0582		B	Addition of User controlled PLMN selector handling test cases for IoT NTN	18.2.0
2025-03	CT#107	CP-250069	0583		B	Addition of Operator controlled PLMN selector handling test cases for IoT NTN	18.2.0
2025-03	CT#107	CP-250069	0584		F	Correction to Access Technology Identifier in IoT NTN TC	18.2.0
2025-06	CT#108	CP-251022	0586	-		Correction to EF5GS3GPPLOCI for NG-RAN and satellite-NG-RAN test cases	18.3.0
2025-06	CT#108	CP-251022	0587	-		Correction to default EF5GS3GPPNSC and EF5GSN3GPPNSC	18.3.0
2025-06	CT#108	CP-251022	0589	-		Correction to 5G-AKA TC 15.3.1, 15.4.1 and 15.4.2	18.3.0
2025-06	CT#108	CP-251029	0590	-		Missing subclause 5.7.1.4 in test case 5.7	18.3.0

History

Version	Date	Status
V18.0.0	November 2024	Publication
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